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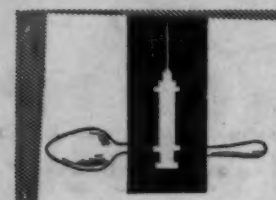

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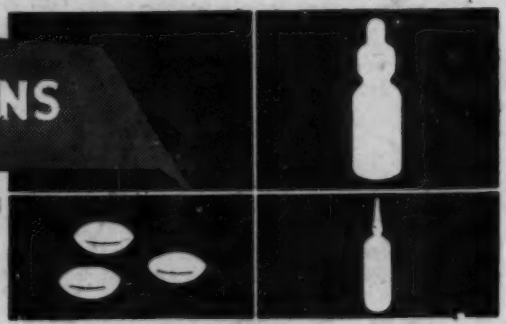

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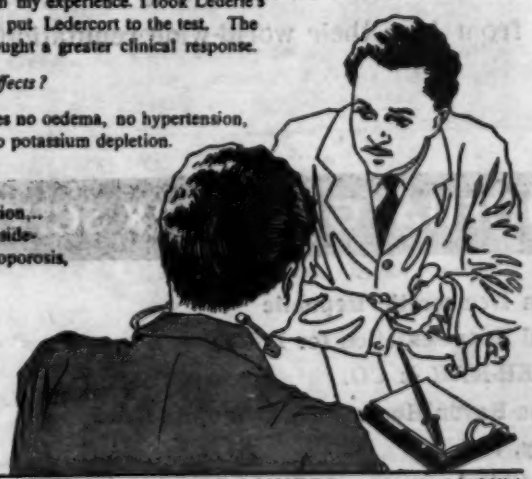

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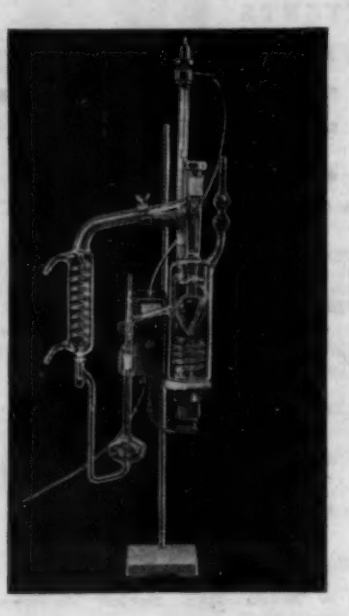

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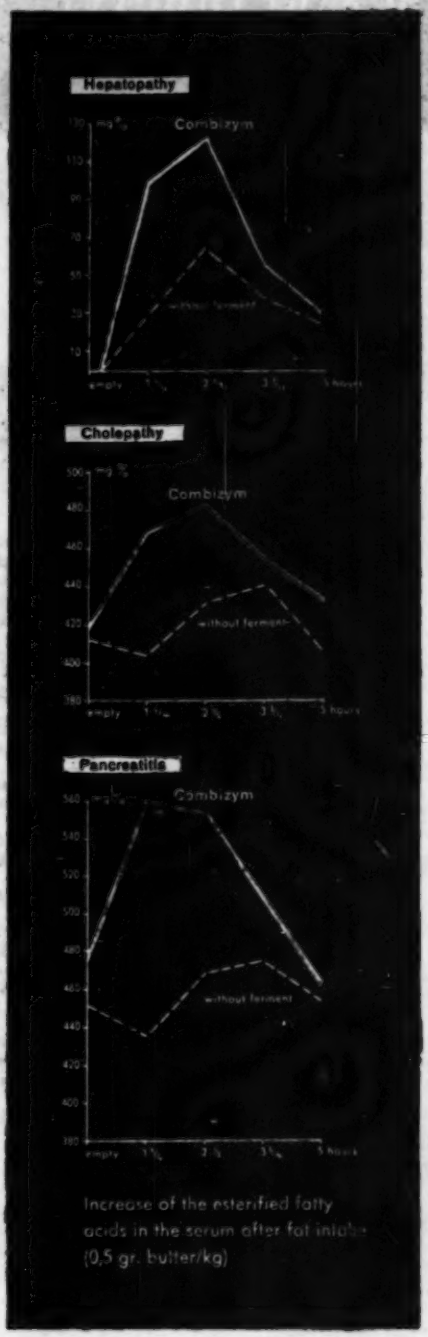

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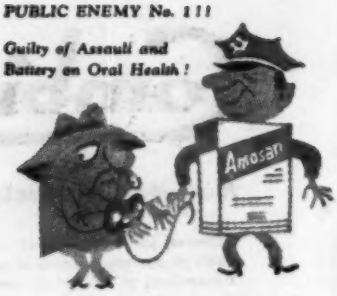

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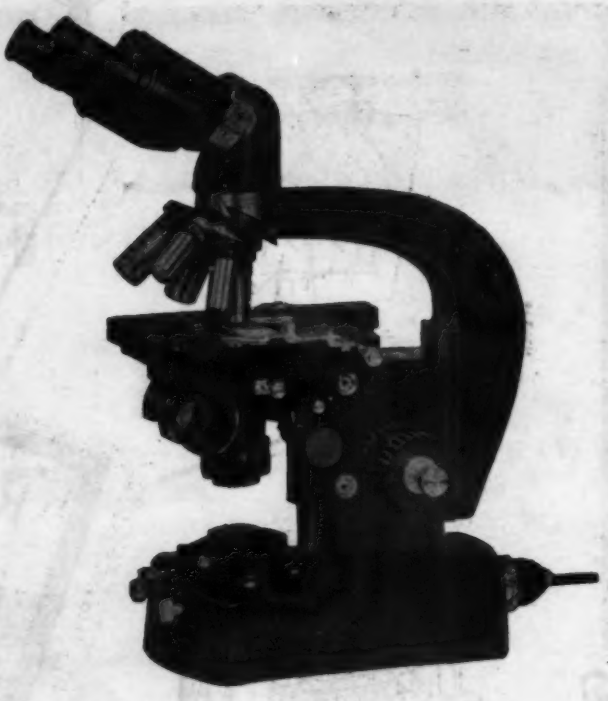

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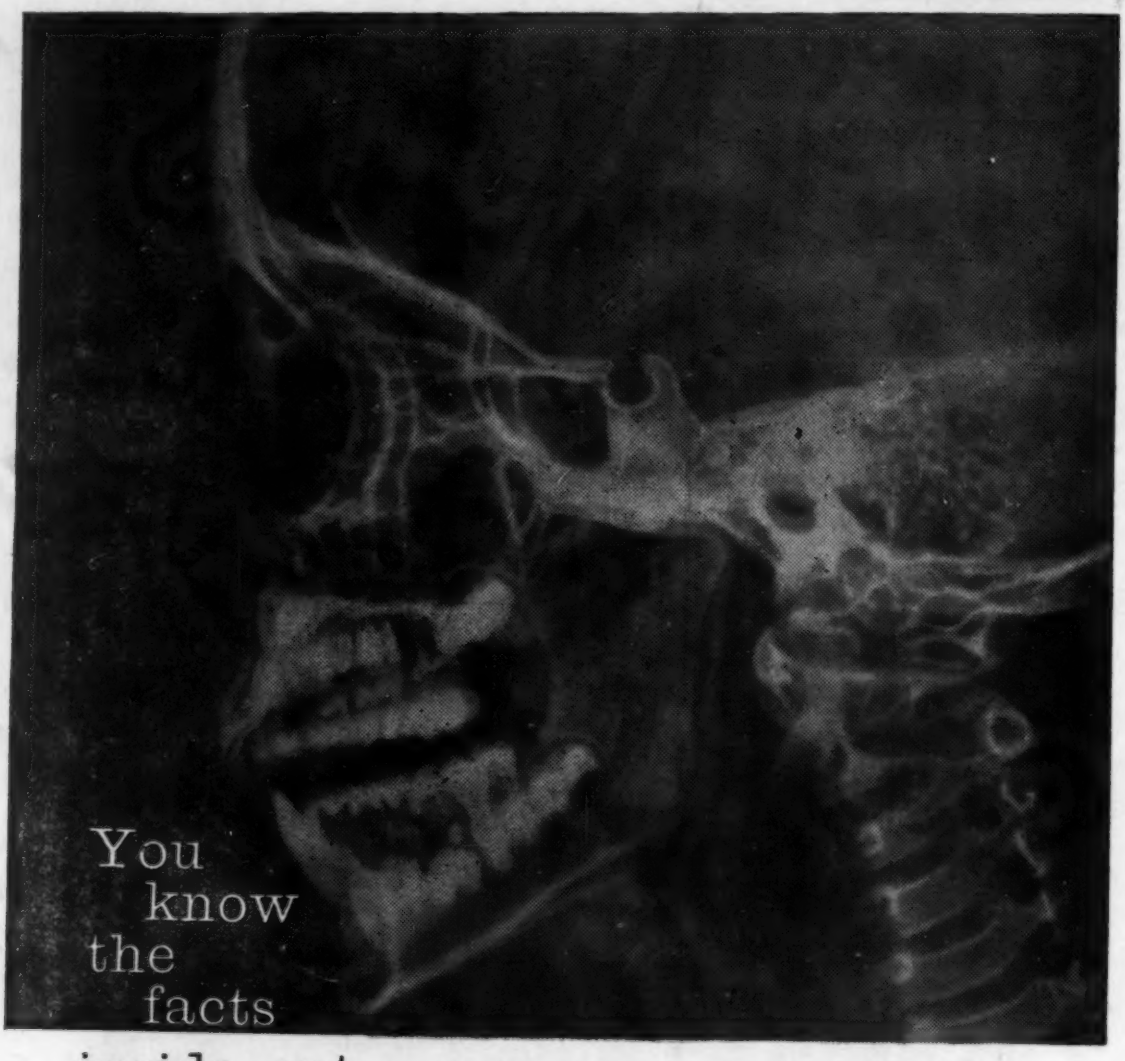

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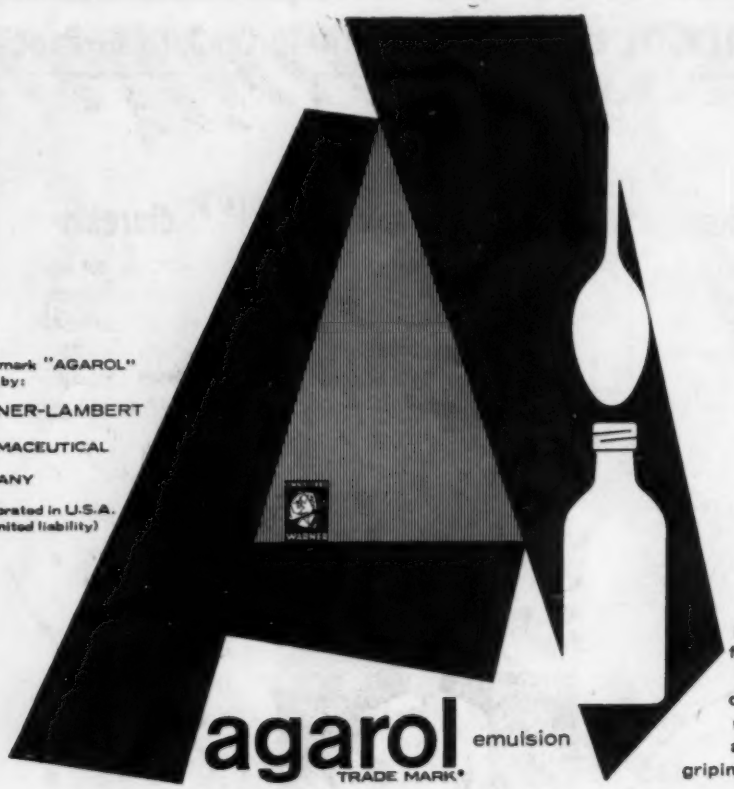

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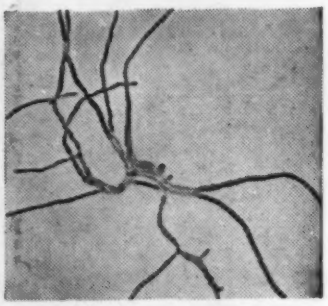
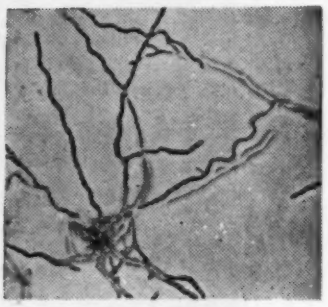
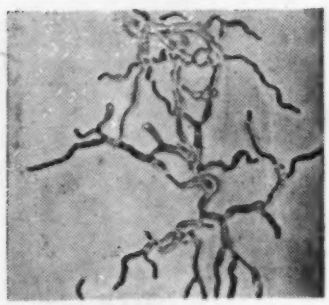


Growth in nutrient with no griseofulvin present.



The effect on growth when 0·1 part per million griseofulvin is present.



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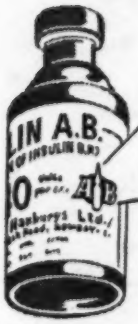

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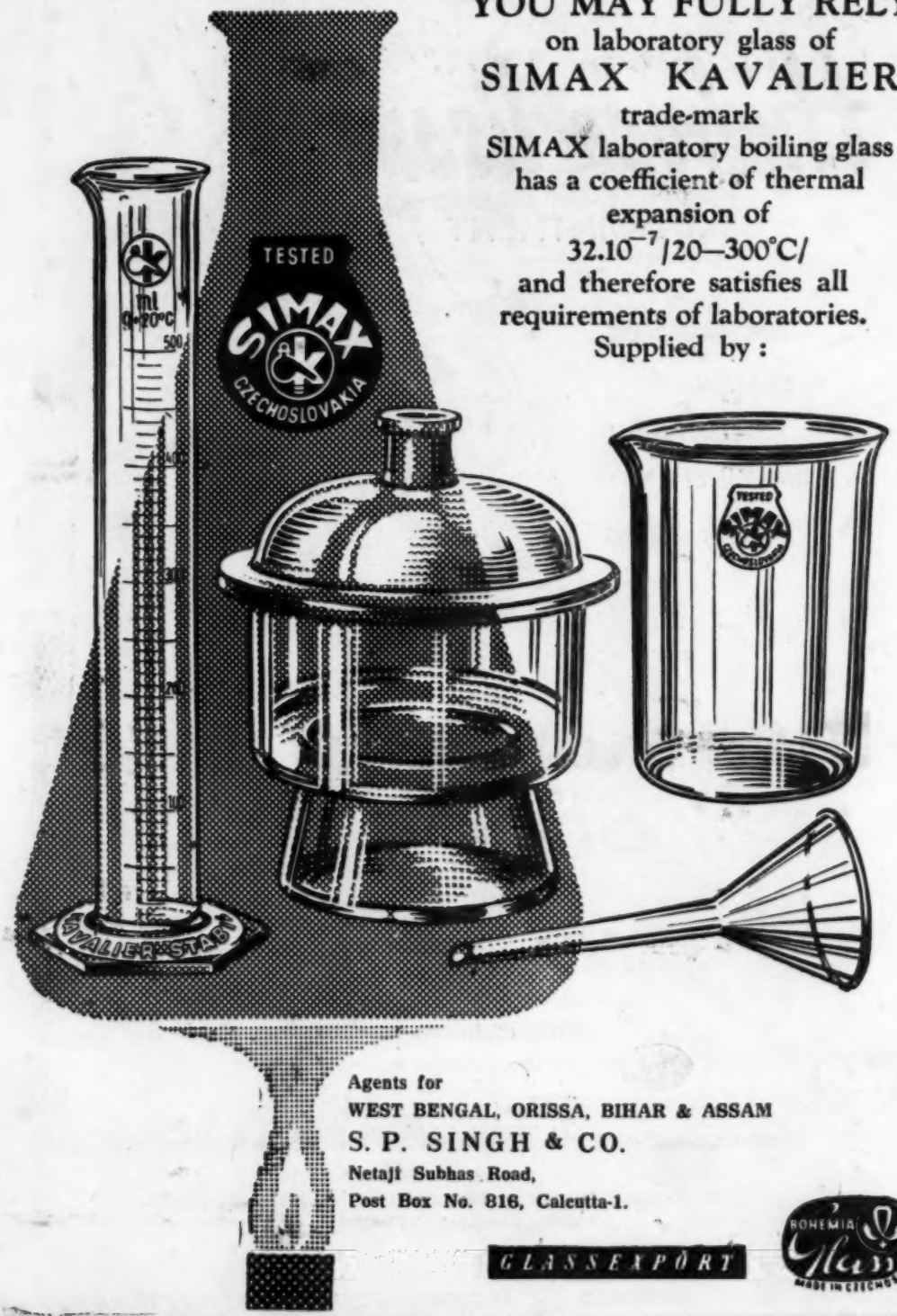

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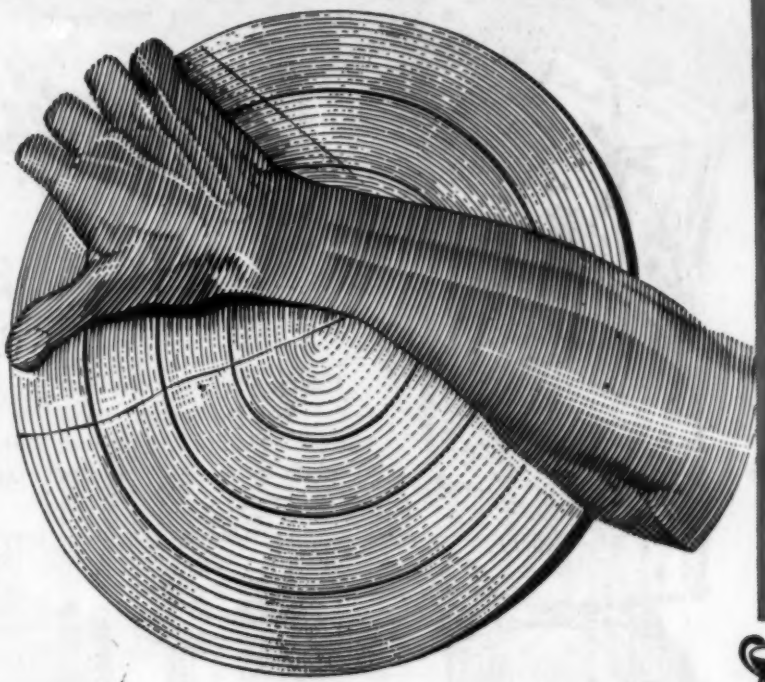

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* *Food Science* 6 (10) 241
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ORIGINAL ARTICLES

OBSERVATIONS ON SPLENECTOMY IN THALASSAEMIA SYNDROME*

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The therapeutic limitation in thalassaemia syndrome is too well-known to need any elaboration. Patients with severe anaemia need periodic blood transfusions to keep them symptom-free and maintain their blood values at a reasonable level compatible with health and activities. The question of splenectomy comes when transfusion requirements increase and signs of hypersplenism (manifested by associated leucopenia and thrombocytopenia) develop. Increase of transfusion requirements is usually related to the development of extracorpuscular haemolytic mechanisms. Repeated attacks of 'crisis' and massive splenomegaly with its mechanical handicap constitute other indications in favour of splenectomy. But even in this selected group, the resultant benefit has been only partial (Glenn *et al*, 1954 ; Smith *et al*, 1955 ; Chatterjea, 1959 ; Smith *et al*, 1960).

During the last 11 years, splenectomy was done in as many as 36 patients of our series. These patients have so far been followed up for a period of 1 to 11 years. The present communication presents the overall results of splenectomy, from the clinical, haematological and biochemical points of view. Results are evaluated in the light of findings in a comparable non-splenectomy series maintained and followed up with other commonly employed therapeutic measures.

* Presented at the VIIIth International Congress of Haematology held in Tokyo, Japan, September 1960.

MATERIALS AND METHODS

Selection of cases—Splenectomy was not recommended unless the patient was followed up for at least one year with a view to ascertaining the basic haematologic values, the variation in clinical symptomatology with reference to various environmental stresses, the transfusion requirements, the incidence of crisis, role of hypersplenism and the patient's general progress and growth patterns. It has been our experience that some of the patients, particularly the older children and adolescents, get remarkably adjusted to low levels of haemoglobin and remain symptom-free till the haemopoietic equilibrium is offset by stressful environmental situations particularly infections resulting in the crisis phenomena when blood values fall very sharply. Sometimes the patients have come under our observations only during the depressed phase of erythropoiesis. If splenectomy is decided upon at such stages, the evaluation of the results becomes fallacious. The presplenectomy values obtained in these situations would represent values lower than their average normal values and postsplenectomy values would appear to be falsely elevated. It was found that for the proper appraisal of the results of splenectomy, it was essential to have clear documentation of the presplenectomy status of the patients.

The thirty-six patients splenectomised comprised homozygous thalassaemia 2, and Hb.E-thalassaemia 34. The ages of these patients varied

TABLE 1—SHOWING A SUMMARY OF FINDINGS IN THE SPLENECTOMY SERIES AND IN THE CONTROL

	Splenectomy series				Control series (without splenectomy)			
	Presplenectomy values		Postsplenectomy values (Follow-up : 1 to 10 years)		Initial values		Final values (Follow-up : 1 to 10 years)	
	Mean	Range	Mean	Range	Mean	Range	Mean	Range
Splenic enlargement (in cm.) ...	12·0	2·5—27	—	—	7	2—12	9	3—25
Hb. (g.%) ...	5·7	3·9—10·4	7·5	5·2—12	6·54	2·61—14·30	6·00	1·27—9·86
P.C.V. (%) ...	20·9	13·5—29·0	23·4	17·0—37·0	22	14—41	21	9—30
Hb. F (%) ...	33·3	11—76	31·8	11—60	30	11—97	28	10—80
Ret. (per c.mm.)	261,000	80,000—460,000	720,000	356,000—1,425,000	235,400	66,000—945,000	234,900	22,500—675,000
Total W.B.C. (,,)	7,211	2,000—13,500	14,490	6,900—39,500	10,900	4,200—21,000	9,530	4,000—25,000
Platelets (,,)	222,400	75,000—400,000	574,300	348,000—1,200,000	282,000	127,000—634,000	268,000	80,000—350,000
Plasma bilirubin (mg.%) ...	1·51	0·6—7·0	1·27	0·4—3·0	1·31	0·4—4·0	1·41	0·6—5·2
Plasma Hb. (mg.%)	23·50	10·7—50	20·1	7·9—39	27·0	5·1—84·0	28·0	7—70
Peripheral normoblasts (per c.mm.)	2,384	75—14,000	46,046	4,850—172,000	3,087	60—18,000	3,894	100—120,000

from 6 months to 24 years, with male 24 and female 12. The haematologic status was variable as summarised in Table 1.

For the proper evaluation of the state of the patient's intrinsic erythropoietic activity, transfusions were withheld as far as possible. Review of relevant literature pertaining to the role of splenectomy indicates that in most of the studies, the state of the patient's intrinsic erythropoietic activity could not be assessed due to periodic blood transfusions which were usually given rather too freely. To estimate the basic presplenectomy values and its modification, if any, by splenectomy it was essential to withhold transfusions. As already stated, these patients get remarkably adjusted to low level of blood, the adjustment usually improving with age. In younger children during active growth period, the adjustment is sometimes in a precarious balance. As the metabolic activities decrease consequent on cessation of growth, the haemopoietic equilibrium stabilises, though the basic blood values may not show any significant rise. The transfusion requirements would also decrease naturally as the patient grows. This natural variation in transfusion requirement should also be kept in view while reviewing the effects of splenectomy.

When transfusion requirements increase progressively and transfused donor's cells are rapidly eliminated particularly with evidence of increased sequestration in the spleen, the indication for splenectomy is clear-cut. In the present communication, an attempt has been made to evaluate other indications which are not equally well defined. The guide to splenectomy in this series was based on the following general criteria: (a) massive splenomegaly with mechanical handicap, (b) evidence of persistent neutropenia and thrombocytopenia, (c) occurrence of repeated crisis and (d) failure to thrive on conservative measures. In a few cases, splenectomy was done in the absence of any specific indication with a view to ascertaining whether splenectomy would in any way improve the basic disorder of erythropoiesis.

After splenectomy—The patients were followed up with serial studies on clinical, haematological and biochemical features.

Control—A control group of 58 patients was similarly followed (Table 1).

The following investigations were done in addition to routine, clinical and haematological examinations: (1) foetal haemoglobin level by the alkali denaturation technique of Singer *et al* (1951); (2) plasma haemoglobin level before (Bing and Baker, 1931) and after 24 hours' incubation (Crosby and Benjamin, 1957); (3) mechanical fragility (Shen *et al*; 1944); (4) osmotic fragility before and after incubation (Ham, 1950);

(5) autohaemolysis (Dacie, 1950) ; (6) glycolytic activity of red cells from an estimation of the rate of glucose consumption (Park and Johnson, 1949) and production of lactic acid (Barker and Summerson, 1941) and pyruvic acid (Koepsell and Johnson, 1942) in samples of blood incubated in Warburg respirometer under standard conditions ; (7) examination of red cells for (a) stability test of reduced glutathione (Beutler *et al*, 1955), (b) glucose-6-phosphate dehydrogonase activity (Kornberg and Horecker, 1955), (c) cholinesterase activity (Fleisher and Pope, 1954), and (d) levels of methaemoglobin (Evelyn and Malloy, 1938).

Results

SPLENECTOMY SERIES :

Of the 36 patients splenectomised, 2 died within 2 days of splenectomy due to postoperative complications and one died 4 months later after an acute infection. Six other patients could not be properly evaluated either due to short follow-up data or transfusions masking the basic values.

The relevant data, before and after splenectomy, in the remaining 27 patients, could be summarised as follows :

Haemoglobin—The average presplenectomy values as recorded in each patient ranged from 3·9 to 10·4 g. per 100 ml. This represented the basic values due to intrinsic erythropoiesis uninfluenced by any blood transfusion. The mean value in the series was 5·7 g. per 100 ml. The corresponding mean values after splenectomy was 7·5 g., the range varying from 5·2 to 12 g. per 100 ml.

P. C. V.—The average presplenectomy values ranged from 13·5 to 29·0 per cent, the mean of the series being 20·9 per cent. After splenectomy, the range varied from 17·0 to 37·0 per cent with a mean value of 23·4 per cent.

Reticulocytes—The average presplenectomy values ranged from 4 to 20 per cent (80,000 to 460,000 per c.mm.), the mean of the series being 10·4 per cent (261,000). After splenectomy, the range varied from 5 to 55 per cent (356,000 to 1,425,000), with a mean of 23·4 per cent (720,000).

Bilirubin—The average presplenectomy values ranged from 0·6 to 7·0 mg per cent, with a mean of 1·51. The corresponding postsplenectomy values were : ranged 0·4 to 3·0 mg per cent ; mean 1·27.

Total W.B.C.—The average presplenectomy values ranged from 2,000 to 13,500 with a mean of 7,211 per c.mm. The corresponding postsplenectomy values were : range 6,900 to 39,500 ; mean 14,496.

Normoblasts in peripheral blood—The presplenectomy values ranged from 75 to 14,000 with a mean of 2,384 per c.mm. The corresponding postsplenectomy values were : range 4,850 to 172,000 ; mean 46,046.

Platelet—The average presplenectomy values ranged from 75,000 to 400,000 with a mean of 222,400 per c.mm. The corresponding values after splenectomy were : range 348,000 to 1,200,000 mean 574,300.

Foetal haemoglobin—The average presplenectomy values ranged from 11·0 to 76 per cent with a mean of 33·3 per cent. The corresponding postsplenectomy values were : range 11·0 to 60 ; mean 31·8 per cent. When considered in the light of total haemoglobin mass, the level of Hb.F appeared to have increased slightly.

Plasma haemoglobin—The average presplenectomy values ranged from 10·7 to 50·0 per cent, with a mean of 23·5 per cent. The corresponding postsplenectomy values were : range 7·9 to 39·0 per cent, mean 20·1 per cent.

Rell cell morphology—The normal effects of splenectomy were exaggerated with increase in the number of leptocytes, target cells along with the appearance of a large number of Howell-Jolly bodies and Cabot's rings and a variable number of nonspecific inclusion bodies.

Data on haemolytic tests—The red cells were osmotically resistant, the resistance persisting even after incubation for 24 and 48 hours. The mechanical fragility, before and after incubation was, however, slightly increased as was the autohaemolysis. Elevated plasma haemoglobin level increased further after 24 hours' incubation. After splenectomy, the osmotic resistance appeared to have slightly increased. The tests for mechanical fragility and autohaemolysis of incubated samples provided no indication pointing to any improvement in the stability pattern of the red cells in circulation (Swarup *et al*, 1960 c). The results in six cases, before and after splenectomy, are summarised in Table 2.

Glycolytic and enzymatic studies—In our preliminary studies, erythrocytes of Hb.E-thalassaemia disease have shown evidences of increased glycolytic activity (Swarup *et al*, 1960 a). The reduced glutathione content of red cells have shown an unstable pattern in a large proportion of subjects (Swarup *et al*, 1960 b). The glucose-6-phosphate dehydrogenase activity has shown normal or high values with normal cholinesterase activity and slight increase in methaemoglobin

TABLE 2—SHOWING PRE- AND POST-SPLENECTOMY DATA ON HAEMOLYTIC STUDIES (IN 6 CASES)

	Before splenectomy		After splenectomy	
	Mean	Range	Mean	Range
OSMOTIC FRAGILITY				
Before incubation				
Haemolysis starts at ..	0·397	0·36 — 0·44	0·377	6·30 — 0·40
Haemolysis ends at ...	0·126	0·05 — 0·20	0·066	0·04 — 0·12
After 24 hours' incubation				
Haemolysis starts at ...	0·487	0·44 — 0·56	0·55	0·4 — 0·6
Haemolysis ends at ...	0·133	0·08 — 0·16	0·067	0·04 — 0·16
MECHANICAL FRAGILITY ...	3·14	1·18 — 8·30	5·46	1·30 — 10·30
INCUBATION HAEMOLYSIS (AUTO-HAEMOLYSIS)	2·21	0·80 — 3·48	3·94	0·94 — 11·30
PLASMA HAEMOGLOBIN				
Before incubation	31·6	11·5 — 46	24·76	9·75 — 35·0
After 24 hours' incubation ...	237·0	55 — 650	298·1	68·8 — 850·0

TABLE 3—SHOWING RESULTS OF GLYCOLYTIC AND ENZYMATIC STUDIES

	GHS instability	G—6—PD units		Cholinesterase activity		Methaemoglobin activity	
		Mean	Range	Mean	Range	Mean	Range
Hb. E-thalassaemia ...	14*/30**	14·3	11 —22	1·29	1·0—1·7	1·41	0·12—3·39
Normal	2*/44**	4·8	4·3— 5·2	0·84	0·7—1·0	0·13	0 —0·35

* Number giving positive reaction; ** Number tested.

content (Table 3). The exact significance of these findings is not clear. These are perhaps related in some way or other to the basic intracorpuscular defect. It is, however, interesting to point out that splenectomised patients have not so far shown any differential pattern (Swarup *et al*, 1960 c).

Transfusion requirement—Transfusion requirement decreased in 9 out of 14 patients in which the evaluation was possible.

Repeated crisis — Evidences of recurring crises were obtainable in 4 patients. In two patients, drop in blood values was associated with megaloblastic marrow possibly due to folic acid deficiency. All these patients improved and the incidence of similar crises was very significantly reduced in the post-splenectomy period.

Associated leucopenia and/or thrombocytopenia—Evidence of leucopenia and/or thrombocytopenia was seen in 12 patients. All of them improved with splenectomy with correction of leucopenia and thrombocytopenia.

Death—In addition to three early deaths already mentioned, seven other patients had died in course of the present study. In four instances, death was due to severe infections—two in the first year, one in the third year and one in the sixth year after splenectomy. The remaining three died of progressive anaemia and congestive cardiac failure with or without infections—two in the first year and one in the second year ; these patients failed to obtain the benefit of timely blood transfusion. The details of the patients are shown in Table 4.

CONTROL (NON-SPLENECTOMY) SERIES :

Follow-up of the cases showed an increase in the size of the spleen, the net increase depending

TABLE 4—SHOWING DETAILS OF PATIENTS WHO DIED IN THE SPLENECTOMY SERIES

Serial No.	Intials	Age (years)		Cause of death	Period of survival after splenectomy	Comment
		At first attendance	At death			
1.	K.C.	½	1½	Severe anaemia with infection	5 months	Did not receive timely transfusion
2.	P.K.D.	1	2¼	—do—	1 year	—do—
3.	A.P.	3	4	—do—	6 months	—do—
4.	N.M.	4	5	Postoperative complications (Jaundice and high fever)	3½ months	—
5.	I.C.	4	11	Severe infection	2½ years	—
6.	D.D.	4	6	Severe anaemia with infection	7 months	Did not receive timely transfusion
7.	R.K.M.	5	6	Postoperative complications	3 days	—
8.	S.S.	9	16	Sudden high fever (? acute infection)	6 months	—
9.	S.N.	24	24	Postoperative complications	1 day	—
10.	P.B.	24	29	Bronchopneumonia	5 years	—

TABLE 5—SHOWING DETAILS OF PATIENTS IN THE CONTROL SERIES WHO DIED

Serial No.	Initials	Age (years)		Cause of death	Comment
		At first attendance	At death		
1.	S.B.	½	3·5	Congestive cardiac failure	Did not receive timely transfusion
2.	A.P.	3	8	Bronchopneumonia	—
3.	M.D.	5	9	Congestive cardiac failure	Did not receive timely transfusion
4.	J.G.	6	9	—do—	—do—

usually on the age of the patient at the time of first attendance. In children, the increase was sometimes considerable, while in adolescents and young adults with milder forms of the disease, no further increase in the splenic size could usually be made out. In a particular patient, at the time of first attendance there was, however, no direct correlation between the splenic size and the degree of anaemia. Compared to the postsplenectomy status, the growth patterns and clinical symptoms in this group did not show any significant difference.

Hb. and P.C.V. values tend to show slight decrease ; W.B.C. was significantly depressed in 2 and platelets also in 2 cases. There was no significant change in the reticulocyte count, bilirubin content, or haemoglobin F level. Number of peripheral normoblasts did not also show any significant change.

Four patients died. The details of these cases are shown in Table 5.

DISCUSSION

In a series of 27 patients in which adequate follow-up data were available, improvement of Hb. and P.C.V. values was seen in as many as 25. The improvement, though slight, appeared to be significant when compared to the natural variation of the disease in the nonsplenectomised subjects.

The plasma bilirubin level after splenectomy tended to fall, but this did not appear to have

attained any significant proportion except in one patient. The reticulocytes however, showed definite rise as did the number of peripheral normoblasts.

Total W.B.C. count showed definite rise. Leucopenia observed in 5 cases was corrected. Similarly platelet counts rose and thrombocytopenia observed in 9 cases was corrected.

Reticulocyte count—In thalassaemia syndrome, the absolute reticulocyte count is increased usually to the extent of 2 to 5 times the normal level. Inspite of this reticulocytosis, the erythropoietic activity is not adequate to maintain normal blood values. After splenectomy, the reticulocyte count increased further, the increase being 2 to 3 times the basic presplenectomy values. If this increase was due to improvement in effective bone marrow function, the blood values should have increased still further. Alternatively, the increase might have been due to the mobilisation of bone marrow 'pool' to the peripheral blod. The associated increase of normoblastosis would favour the latter possibility. In this context, it is possible that the slight elevation of Hb., R.B.C., P.C.V. values as recorded is due to the increase in the number of reticulocytes which in red cell count, haemoglobin estimation and P.C.V. determination cannot be differentiated from mature red cells. In view of the fact that reticulocytes mobilised from the marrow are relatively more immature, their presence in the peripheral blood as also normoblastosis are not expected to serve any useful function. The reticulocyte number in the circulating blood is determined by three variables: (a) the rate of production of new reticulocytes in the marrow, (b) the stage of maturation at which reticulocytes are delivered into peripheral circulation and (c) the rate of disappearance of reticular substance. It has been shown by Baldini and Pannacciulli (1960) that in Cooley's anaemia, *in vitro* maturation of reticulocytes is prolonged due to the presence of younger reticulocytes and the delay in the rate of disappearance of reticular substance. Our preliminary studies on respiratory and cholinesterase activity of thalassaemic cells have also shown that reticulocytes in this disease do not have the expected activity of normal reticulocytes (Swarup *et al*, 1960a, 1960b, 1960c). These facts would confirm that the number of reticulocytes in the circulating blood cannot be indiscriminately used as a precise index of effective erythropoiesis. In view of the very high reticulocyte count (40 to 60 per cent) observed in some patients after splenectomy, it would become necessary to make correction for the same in red cell count. The necessity for such correction becomes all the more pertinent with growing realisation that reticulocytes in this disorder are relatively more immature and functionally less active. Just as normoblasts must be subtracted in the enumeration of leucocytes, similarly reticulocytes may be deducted for a proper appraisal of the true red cell count.

Results of the various haemolytic tests indicate that splenectomy does not in any way improve the stability of the circulating red cells. The glycolytic and enzymatic studies would also tend to show that splenectomy does not in any significant way modify the related intracorpuscular defect.

In thalassaemia syndrome, the main cause of anaemia is ineffective erythropoiesis resulting in the release of a large number of grossly malformed red cells which are rapidly eliminated not only through the mediation of reticuloendothelial system but also intravascularly. The red cells are too unstable to stand the wear and tear of normal circulatory trauma. A review of overall results of splenectomy indicates that in an average case, the role of spleen in the causation of anaemia is of minor importance. In the present series, massive splenomegaly associated with leucopenia and/or thrombocytopenia have, however, provided definite indications for splenectomy. Removal of 'splenic load' added to the general comfort and well being of the patients. Splenectomy has further been beneficial in instances of recurring crises. The role of splenectomy in reducing the transfusion requirements could also be confirmed.

In the absence of any specific indication, small children with severe anaemia are in general less likely to benefit from splenectomy than older children. This is due to the former group having more severe erythropoietic defect which is hardly influenced by splenectomy.

Susceptibility to infection, particularly during the first two years following splenectomy, appeared to be a real problem to be alerted to.

Summary

Review of the results of splenectomy in a series of 36 patients with thalassaemia syndrome indicates that the stability of the red cells are not improved by the operation. Significant haematological changes are increase in the number of reticulocytes and normoblasts due presumably to their mobilisation from the marrow. It is doubtful whether splenectomy would raise the basic R.B.C. and Hb. levels. It may, however, prevent deterioration of blood values. Splenectomy is not useful in all cases. Recommendations for splenectomy should be restricted to the cases showing (a) massive splenomegaly, (b) hypersple-

nism, (c) repeated crises and (4) rapid destruction of transfused cells (from compatible donors) particularly with evidence of splenic sequestration.

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REFERENCES

BALDINI, M. AND PANNACCIULLI, I.—*Blood*, **15** : 614, 1960.

BARKER, S. B. AND SUMMERSON, W. H.—*Ibid*, **138** : 535, 1941.

BEUTLER, E., DERN, R. J. AND ALVING, A. S.—*J. Lab. & Clin. Med.*, **45** : 40, 1955.

BING, F. C. AND BAKER, R. W.—*J. Biol. Chem.* **92** : 589-600, 1931.

CHATTERJEA, J. B.—Haemoglobinopathy in India. *Abnormal Haemoglobins*, a symposium organised by C.I.O.M.S., 1957, Blackwell Scientific Publications, Oxford, pp. 322-339, 1959.

CROSBY, W. H. AND BENJAMIN, N. R.—*Blood*, **12** : 701-709, 1957.

DACIE, J. V.—Practical Haematology, 1950, Churchill, London.

EVELYN, K. A. AND MALLOY, H. T.—*J. Biol. Chem.*, **126** : 655, 1938.

FLEISHER, J. M. AND POPE, E. J.—*Arch. Indust Hyg.*, **9** : 323, 1954.

GLENN, P., CORNELL, G. N., SMITH, C. H. AND SCHULMAN, I.—*Surg. Gynec. & Obst.*, **99** : 689, 1954.

HAM, T. H.—A Syllabus of Laboratory Examinations in Clinical Diagnosis, 1950, Harvard, Cambridge.

KOEPSELL, H. J. AND JOHNSON, M. J.—*Ibid*, **145** : 379, 1942.

KORNBERG, A. AND HORECKER, B. L.—Methods in Enzymology Edited by S. P. Colowick and N. O. Kaplan, 1955, Vol. 1, Acad. Press, New York, pp. 323-327.

PARK, J. T. AND JOHNSON, M. J.—*J. Biol. Chem.*, **181** : 149, 1949.

SHEN, S. C., CASTLE, W. B. AND FLEMING, E. M.—*Science*, **100** : 387, 1944.

SINGER, K., CHERNOFF, A. I. AND SINGER, L.—*Blood*, **6** : 429, 1951.

SMITH, C. H., ERLANDSON, M. E., STERN, G. AND SCHULMAN, I.—*Ibid*, **15** : 197, 1960.

SMITH, C. H., SCHULMAN, I., ANDO, R. E. AND STERN, G.—*Ibid*, **10** : 582, 1955.

SWARUP, SUSHIELA, GOHSH, S. K. AND CHATTERJEA, J. B.—*Bull. Calcutta School Trop. Med.*, **8** : 111, 1960(a).

Idem—*Nature*, **188** : 153, 1960(b).

Idem—Annual Report of Haematological Unit, Indian Council of Medical Research, 1960(c).

SELECTION OF CASES FOR AORTIC VALVOTOMY

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The beneficial effects of aortic valvotomy in aortic stenosis have been amply proved since the first valvotomy was performed by Tuffier in 1913. He attempted to dilate the stenosis from outside by invaginating the aortic wall into the aortic orifice. Bailey *et al* (1954) first reported the transventricular valvotomy. Since then the surgical and anaesthetic techniques have advanced, especially with the introduction of hypothermia and heart-lung bypass in cardiac surgery. The operation itself is not so hazardous as in the past, although the mortality rates in selected institutions range between 10 and 15 per cent (Brock, 1957).

The operation of aortic valvotomy has been undertaken in the western countries for about a decade. But in India the surgery of aortic valve is still in its infancy. In our unit aortic valvotomy has been undertaken since 1959. The present paper is concerned with our experiences in the first ten cases of aortic valvular disease admitted to this unit for investigation and operation.

MATERIAL AND METHODS

The ten cases of aortic valvular disease were admitted to this unit since July, 1959, and their ages ranged from 12 to 45 years. Eight of the patients were male. The cases have been followed up for a year or more. The clinical diagnosis of aortic stenosis was established on the following findings:

1. *Clinical examination*—

(a) A midsystolic ejection murmur at the base of the heart accompanied by a systolic thrill. The murmur was conducted up the carotids in the neck. Reversed splitting of second sound was noted in one case.

(b) Left ventricular type of apical impulse.

2. *Radiographic examination*—This showed enlarged cardiac silhouette with left ventricular (L.V.) configuration.

3. *Electrocardiographic examination* (12 leads)—This showed in all cases the usual pattern of left ventricular hypertrophy.

The clinical findings were further confirmed by at least two other independent observers.

After admission five of the patients were screened for evidence of calcification in the aortic valve region (Wood, 1956).

In every case the severity of the stenosis was further assessed by simultaneous brachial artery puncture and left heart catheterisation following Brock's technique (Brock *et al*. 1956).

The patient was kept in supine position and a premedication with barbiturate (3 gr) was given. Arrangements for emergency thoracotomy, cardiac massage, aortic valvotomy were kept at hand. The skin about 2 cm. below and lateral to the apex of the heart was locally anaesthetised by novocaine 1 per cent and infiltrated up to the pericardium. A No. 18 gauge needle 12·5 cm. long was inserted at the apex and directed upwards towards the right second costochondral junction with a backward angle of 35°. The thrust on the needle was felt when it touched the ventricular wall. After pushing further the needle entered the L. V. cavity and then the stillet was taken out, when blood was seen sprouting out during systole. Immediately after the brachial artery was punctured. Both needles were connected to the pressure recording apparatus of our Sanborn twin channel machine with simultaneous E.C.G. recordings. After the tracings were taken both the needles were taken out and firm pressure was applied over both sites for five minutes. The patient was kept supine in bed for twelve hours. During this period close watch was kept on the venous pressure by observing the neck veins. No untoward complications were observed following these operations except in one case where ventricular tachycardia was precipitated during the manoeuvre. Fortunately this subsided immediately following the withdrawal of the needle.

A few illustrative cases are reported:

Case Reports

Case 1—B.G., 12 years, female, had dyspnoea on accustomed exertion for one year. Pulse: small volume (anacrotic type); B.P.: 95/70 mm. Hg; Apical impulse: L.V. type; X-ray: some enlargement of cardiac shadow; E.C.G.: some degree of L.V. hypertrophy; Left heart catheterisation: 65 mm. Hg, pressure gradient across the aortic valve (cf. normal: no gradient) Systolic upstroke time, i.e., time taken by the percussion wave in brachial artery tracing from its start up to the peak: 0·2 second in this case (Fig. 1).

Aortic open valvotomy was undertaken under hypothermia in December, 1959. The patient had subvalvar stenosis, which was dilated. She was followed up for a year. When last seen her symptoms had considerably improved.

Comment—This case had congenital subvalvar aortic stenosis in which surgical treatment proved to be of great benefit to the patient.

Case 2—S. R., 42 years, male, with past history of rheumatic fever. He had dyspnoea on accustomed exertion. Pulse: normal; B.P.: 120/80 mm. Hg; Clinical-

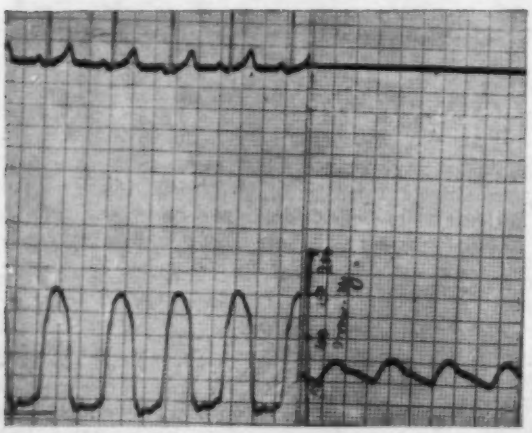

Fig. 1—Showing Pressure Gradient of 65 mm. of Hg across the Aortic Valve. The Brachial Pulse Wave is of Anacrotic Type, Systolic Upstroke Time=0·2 Second.

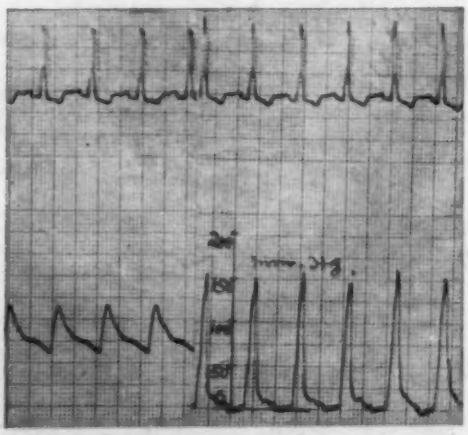

Fig. 2—Showing Pressure Gradient of 35 mm. of Hg across the Aortic Valve. The Brachial Pulse Wave is showing Steep Ascent of the Percussion Lamb. Systolic Upstroke Time= 0·08 Second which is within Normal Limits.

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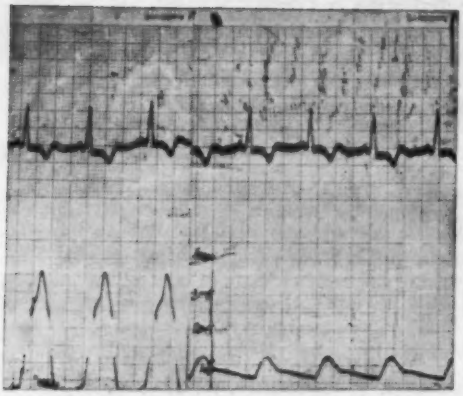

FIG. 3—SHOWING HIGH PRESSURE GRADIENT OF 100 MM. OF HG ACROSS THE AORTIC VALVE. THE BRACHIAL PULSE TRACING SHOWS SYSTOLIC UPSTROKE TIME OF 0·18 SECOND.

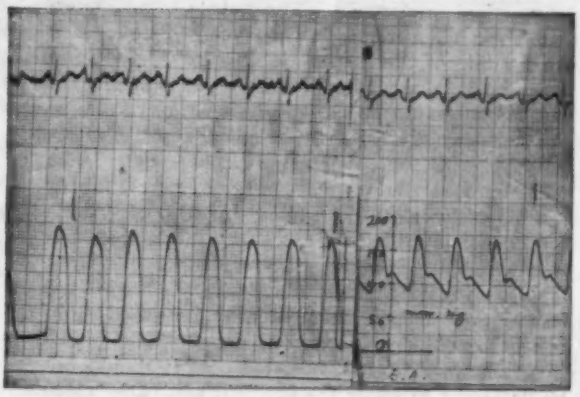

FIG. 4—SHOWING NO PRESSURE GRADIENT ACROSS THE AORTIC VALVE. THE BRACHIAL PULSE TRACING IS OF NORMAL CHARACTER WITH NORMAL DICROTIC NOTCH IN THE DESCENDING LIMB.

ly : L.V. enlargement of the heart. Basal mid-systolic and early diastolic murmurs were accompanied by systolic thrill. X-ray : cardiac silhouette enlarged. E.C.G. : L.V. hypertrophy with coronary ischaemia. Left heart catheterisation ; dominant lesion—aortic incompetence. Systolic upstroke time : 0·08 second. (Note the steep ascending limb of the pulse tracing in Fig. 2 (cf. anacrotic wave in Fig. 1). Operation was contra-indicated due to dominant aortic incompetence.

Comment—The findings illustrate the importance of pressure studies to determine the dominant lesion in a case with mixed stenosis and incompetence. The clinical judgment solely cannot determine the operability in a case like this where there was no peripheral evidence of aortic leak.

CASE 3—Mrs. S.K., 30 years, female, had dyspnoea on accustomed exertion. No rheumatic history in the past. Clinically : L.V. enlargement of the heart. Basal midsystolic murmur accompanied by systolic thrill. Reversed splitting of second sound at the base (aortic area). X-ray : enlarged cardiac silhouette. E.C.G. : L.V. hypertrophy with coronary ischaemia. Left heart catheterisation : pressure gradient of 100 mm. Hg, across the valve. Systolic upstroke time : 0·18 second (Fig. 3).

Closed transventricular valvotomy was undertaken. Postoperative pressure gradient on the operation table : 35 mm. Hg.

Comment—The patient had signs of severe aortic stenosis, proved by pressure study. She derived great benefit from the operation.

CASE 4—C.D.S., 45 years, male, had slight dyspnoea on exertion. No rheumatic history in the past. Clinically signs of both mitral and aortic stenosis present. No cardiac enlargement. X-ray : slight enlargement of cardiac shadow. E.C.G. : 'P' mitrale present, otherwise normal pattern.

Right and left heart catheterisation revealed slightly raised indirect left atrial pressure, no pressure gradient across the aortic valve.

Pulse tracing : normal pattern (Fig. 4).

Considering his age and mild disability no operation on mitral valve was undertaken.

Comment—This patient with combined lesions of mitral and aortic valves once again demonstrated the necessity of catheter study. Though the patient had clinically moderately severe aortic stenosis, catheter study proved that the stenosis was not severe enough to warrant valvotomy.

RESULTS

Of ten cases of aortic valvular diseases investigated in our unit, six had aortic valvotomy and the rest were not suitable for operation. There was one operative death from ventricular fibrillation. Three patients derived good symptomatic relief from the operation. Following operation two developed some degree of incompetence.

DISCUSSION

It has always been a difficult problem for the physician to select the cases with aortic stenosis suitable for valvotomy. "The decision is hard to make, because most patients do well for so many years that any great risk does not seem justified. . . . . Although the operative management of the disease is still far from perfect, it nevertheless, offers more than does continued medical management at this stage of the disease." (Baker and Campbell, 1956). Many of us do not share the views of Brock (1957) that aortic valvotomy should be undertaken on the patients before they had symptoms. By and large, the consensus of opinion is in favour of valvotomy only on those patients who have symptoms due to low cardiac output, e.g., fainting attack, giddiness, anginal

pain, effort intolerance. The nature of the pulse (anacrotic character) with delayed upstroke is a good guide of the degree of stenosis. Low pulse pressure is also of help. Reversed splitting of the second sound at the base is also diagnostic of severe stenosis. Not infrequently, aortic stenosis co-exists with some degree of incompetence. The predominating lesion may be extremely difficult to judge clinically. The mere presence of systolic thrill and murmur at the aortic area is not a reliable sign of aortic stenosis, as it has been reported in some cases where the predominating lesion was aortic incompetence diagnosed only after thoracotomy.

Mathews *et al* (1955) stated that it should not be necessary to know the gradient across the valve to assess the severity of stenosis, although they did not give any figures in support of their statement. The present series consisted of cases referred by physicians to our unit with the diagnosis of dominant stenosis and as such should be benefited by operation. Evaluation of our results clearly shows that clinical assessment may be deceptive in some cases. Thus, of our ten cases four were unsuitable for operation.

Our method of assessment is not a perfect one in the sense that so long as we cannot measure the forward flow through the aortic orifice, the high pressure gradient across the valve is a crude method of assessing the severity of stenosis. The withdrawal pressure recording from the aorta to the left ventricle by passing a polythene tube through the ventricular puncture needle is helpful in diagnosing subvalvar stenosis. But technically it is difficult to pass the catheter many a time. Left heart angiocardiography is of help here and in future we are contemplating to undertake the same in suitable cases.

Our criteria of operability in aortic stenosis were the following :

1. Disability of the patient with clinical signs of severe stenosis as described before.
2. Evidence of left ventricular hypertrophy in E.C.G. Concurrent ischaemia of myocardium was not an absolute contra-indication.
3. Left heart catheterisation study and pulse tracing : Pressure gradient of 50 mm.Hg and systolic upstroke time more than 0·18 second were considered as good indications for valvotomy.

Summary

Ten cases of aortic valvular diseases were investigated in our unit by left heart catheterisation study. A simple and relatively safe method for catheterisation has been discussed. It has been stressed that before operation one should assess the case both clinically and by pressure gradient study to find out the predominant pathology in a case with mixed valvular lesions.

Acknowledgments

Our grateful thanks are due to Major-General A. K. Gupta, Surgeon-Superintendent of this Hospital for his permission to use the case records. We are particularly grateful to Dr. D. Sen Gupta for his valuable help in undertaking the catheter study in most of the cases.

References

Bailey, C. P., Bolton, H. E., Jamison, W. L. and Nichols, H. T.—*Circulation*, **9** : 22, 1954.

Baker, C. and Campbell, M.—*Lancet*, **1** : 171, 1956.

Brock, R. C., Milstein, B. B. and Ross, D. N.—*Thorax*, **11** : 163, 1956.

Brock, R. C.—*Brit. M. J.*, **1** : 1019, 1957.

Matthews, M. B., Medd, W. E. and Gorling, R.—*Ibid*, **2** : 750, 1955.

Wood, P.—Diseases of the Heart and Circulation, 1956, Eyre & Spottiswoode, London.

TUBERCULOUS MENINGITIS

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Tuberculous meningitis, till recently, was considered the terminal event in fatal cases of tuberculosis and the prognosis was hopeless. But doubt always hangs over the exact nature of the cases that recover. With the introduction of specific antituberculous drugs, the prognosis has improved considerably provided cases are diagnosed in time and treated properly for a prolonged period. With the controversy still continuing about the route of administration of streptomycin, it was thought that evaluation and reporting of the results of cases of tuberculous meningitis treated at the Irwin Hospital might be useful. With this idea a study of 20 cases of tuberculous meningitis is reported.

Material and Methods

Twenty cases of tuberculous meningitis, admitted in the children and adult medical wards of the Irwin Hospital, Jamnagar, from 1-5-58 to 30-6-59 were studied. The case histories were recorded in detail including the treatment undergone by the patients prior to hospitalisation. A

thorough clinical examination was done ; the cerebrospinal fluid (C.S.F.) was examined initially and later at repeated intervals, and the chest was either x-rayed or screened. Culture of tubercle bacilli could not be done. Patients were persuaded to remain in the hospital as long as possible. However, many patients went home earlier than we would have liked. They were advised to report for check-up every month. A follow-up study of those who reported was continued. The initial treatment was with streptomycin 1 g. intramuscularly and INH 300 mg. orally daily for adults and proportionately less for children. Four cases were given hydrocortisone orally for 3 weeks and one case was given hydrocortisone 50 mg. intrathecally and streptomycin 75 mg. intramuscularly twice a week for 3 weeks.

Results and Discussion

The mortality and recovery rates in different age-groups are shown in Table 1.

Table 1—Showing Result of Treatment

Age group	No. admitted	No. died	No. recovered
0-2 years ...	3	2	1
3-12 „ ...	8	1	7
13-38 „ ...	9	3	6
	—	—	—
Total ...	20	6	14

The overall mortality rate was 30 per cent and recovery rate was 70 per cent. Those under two years of age showed the worst results. However, as in each age-group, the number of cases was small, the percentage results were not deduced.

Out of the six patients who died, three died on the day of admission, one each died on the 2nd, 3rd and 4th day of admission. The patients who survived the first week and thus had time enough for drugs to act, recovered. Table 2 shows the death and recovery rates as against duration of the illness before hospitalisation.

Table 2—Showing Death and Recovery Rates Against Duration of Illness Before Admission

Duration of illness before hospitalisation	No. of cases	No. died	No. recovered
15 days or less ...	2	—	2
16-30 days ...	8	1	7
Upto 2 months ...	4	1	3
2-3 months ...	6	4	2

Table 2 shows that the longer the duration of illness before diagnosis and starting of treatment, the worse are the results. Hence the necessity of diagnosing the cases early.

The duration of hospital stay of those who recovered varied from 1 to 4 months.

The condition of sensorium at the time of diagnosis is important from the prognostic point of view. Rossi and Stockli (1955) state that the prognosis of those who are in coma is very bad. In the present series, six patients were admitted in comatose condition, of which four died ; two of them were children and both of them died ; out of four adults two died.

Clinically, the following important signs were observed (Table 3).

Table 3—Showing an Analysis of Signs

Signs	No. of cases
Fever, varying from 99—104°F ...	20
Coma	6
Convulsions	5
Neck rigidity	15
Kernig's sign	14
Sixth cranial nerve palsy (bilateral) ...	2
Third cranial nerve palsy (unilateral)	1
Hemiparesis	2
Retention of urine (children under 3 excluded)	6

Moreau *et al* (1954) have drawn attention to neurological complications in tuberculous meningitis. Ocular palsies have occurred in 3 cases in the present series. One of the cases died and the remaining two recovered. In the latter cases the palsies became less and less and were no longer present at the time of discharge. Hemiparesis occurred in two cases, both of them children. One case who had been followed up for 2 years had residual spastic hemiparesis and was much less disabled than he was at the onset of the illness. He was able to walk with a limp and feed himself and also attend school. No behavioural problem was noticed in any of those who recovered.

Tuberculous focus elsewhere in the body—The chest of all the 14 cases was examined radiologically—6 were x-rayed and 8 screened. A detailed radiological examination of gastro-intestinal tract or of urinary tract was not conducted, as none of them complained of any symptoms pointing to an affection of those systems. The results are given in Table 4.

Cerebrospinal fluid—The initial C.S.F. picture is shown in Table 5.

TABLE 4—SHOWING DISTRIBUTION OF TUBERCULOUS FOCI IN DIFFERENT PARTS OF THE BODY

No. of cases examined	Site of tuberculous focus				
	Lungs	Lymph nodes		Spine	Miscellaneous
		Mediastinal	Cervical		
14	4	1	2	1	6

TABLE 5—SHOWING RESULT OF EXAMINATION OF C. S. FLUID (FIRST SPECIMEN)

Colour	Colourless to faint yellowish
Proteins	180—500 mg. per cent
Sugar	10—30 mg. per cent
Chlorides	590—670 mg. per cent
Cells	36—248/c.mm.
Tubercle bacilli on direct smear examination ...	nil

No corelation existed between the initial clinical condition of the patient and initial C.S.F. findings, nor was there any corelation between initial C.S.F. findings and final outcome of the illness.

If the patient's clinical condition improved with treatment, C.S.F. was examined at intervals of one month. If his condition did not show any improvement or showed arrest of improvement, it was examined sooner. The C.S.F. of 2 cases was examined for a fairly long time and the pictures are presented in Table 6.

TABLE 6—SHOWING THE C.S.F. FINDINGS IN TWO CASES

Items	Case 1			Case 2		
	Initial	After 3 months	After 9 months	Initial	After 3 months	After 9 months
Protein ... (mg.%)	150	280	70	180	100	40
Sugar ... (mg.%)	10	23	40	15	35	50
Chloride ... (mg.%)	650	660	670	680	680	600
Cells ... (/c.mm.)	140	30	10	150	44	3-5

FOLLOW-UP

All patients at the time of leaving the hospital were instructed to report for check-up at intervals of one month. Only six of them reported for varying lengths of time as follows: 2 for 2 years, 2 for 9 months, 1 each for 5 months and 3 months respectively. It is not known whether some of those who did not report died and, therefore, stopped reporting.

TREATMENT

All adult cases on admission were given injection of dihydrostreptomycin 1 g., I.M. daily and isonicotinic acid hydrazide 300 mg./day for first 30 days. Then streptomycin was injected every other day and, depending upon the clinical condition, later on streptomycin was given twice a week, usually after 3 months of starting of treatment. Children were given proportionately smaller doses. At the time of discharge from the hospital, they were instructed to continue to take streptomycin 1 g., I.M., twice a week, and INH 300 mg. orally daily (children in proportionately lesser doses) for two years. Intrathecal streptomycin was given in only one case. All of the patients who survived the initial week after admission recovered on intramuscular injection of streptomycin combined with oral INH. This proves that in practically all patients intrathecal streptomycin can be omitted. Waddell *et al* (1954) state that intramuscular injection of streptomycin (but not intrathecal streptomycin) and oral INH are preferable. Two cases who were unconscious and could not swallow were given during the first few days intramuscular injection of isonicotinic acid hydrazide, 300 mg./day.

Exudates may cause vascular occlusion and fibrosis, which may lead to cranial nerve palsies, hydrocephalus and spinal block. Previous efforts to prevent obstruction with intrathecal injection of P.P.D., heparin, streptokinase and trypsin have been hazardous and disappointing.

Cortisone—Shane and Riley (1953) first suggested the use of cortisone in tuberculous meningitis. Ashby and Grant (1955) reported favourable results in patients treated with cortisone. Michel and Pulver (1956) treated 8 cases. In the present series hydrocortisone was used in 4 cases. One person did not show reasonable improvement on I.M. streptomycin and oral INH and 3 patients were judged to be in critical condition on admission. They were administered hydrocortisone orally, 60 mg./day in divided doses during the first week after which the drug was gradually tapered off during the next three weeks. Two of them had ocular palsies. Three of them not only began to show improvement in their general clinical condition, but the ocular palsies

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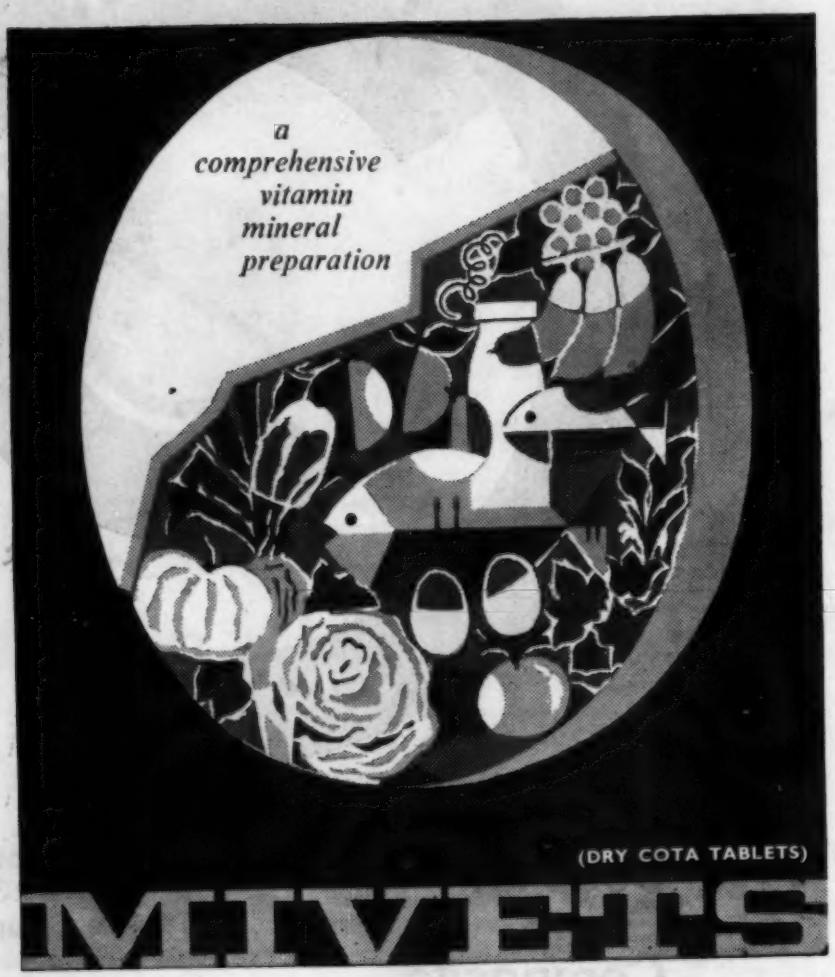
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in the two cases also resolved completely. Though it may not be feasible to use adrenal cortical steroids in all cases due to economic reasons, they are very helpful in recovery of serious cases in whom they must be used and if possible they should be used in all cases of tuberculous meningitis in addition to intramuscular injection of streptomycin and oral INH. The danger of disseminating tuberculosis is no argument against cortisone therapy in tuberculous meningitis. One case who was judged serious and was given hydrocortisone orally did not show improvement even after 1½ months. At that time C.S.F. showed signs of partial subarachnoid block ; proteins were 850 mg. per cent and cells were 270/c.mm. She was given intrathecal hydrocortisone ('Efcorlin soluble', Glaxo) 50 mg. with streptomycin 20 mg. and then 50 mg. twice a week for 3 weeks. She improved remarkably. She was able to sleep undisturbed, stopped screaming and was able to sit up and stand within 2 weeks after the first injection. Her C.S.F., one week after the first intrathecal cortisone, did not show any marked change in proteins. She went home in high spirits. It has not been possible to follow her up. But intrathecal hydrocortisone certainly proved to be life-saving in her case.

Summary and Conclusion

A study of 20 cases of tuberculous meningitis with follow-up of six cases for varying periods is reported.

Age incidence has been from below one year to 38 years. Number of cases below 12 years is more than that between 12 and 38 years.

Age under 2 years, long duration of illness before institution of therapy, and coma are of bad prognosis.

Ocular palsies and hemiparesis are not uncommon. Ocular palsies are probably due to adhesions due to tuberculous exudate as they resolve completely.

It has taken 8-9 months for C.S.F. to return to practically normal.

Intramuscular injection of streptomycin, oral INH and in a few cases oral cortical steroids are sufficient to bring about recovery in most of the patients, making the necessity of intrathecal streptomycin very rare. Occasionally a case may require intrathecal streptomycin, or streptomycin and hydrocortisone treatment.

All deaths occurred within a week after admission, and hence the overall immediate recovery rate is only 70 per cent.

Acknowledgment

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References

Ashby, M. and Grant, H.—*Lancet*, **1** : 65, 1955.

Michel, F. and Pulver, W.—Year Book of Neurology and Neuro-Psychiatry, 1955-56. Year Book Publishers, Chicago, Ill., p. 46.

Moreau, R., Boudin, G. and Lhermittem, F.—*Rev. Neurol.*, **90** : 687, 1954.

Rossi, R. and Stockli, A.—*Helvet Paediat. Acta.*, **5** : 451, 1953.

Shane, S. I. and Rieley, C.—*New England J. Med.*, **249** : 829, 1953.

Waddell, W. W., Jr., Booker, A. P., Gregory, W. C. and Bobbitt, O. B.—*Am. J. Dis. Child.*, **87** : 273, 1954.

TUBERCULOSIS IN INFANCY AND CHILDHOOD—HUMAN SOURCE OF INFECTION

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Since bovine tuberculous infection in man is extremely rare in this country, the most fruitful field in which to seek for tuberculous infection and disease in children is amongst human adult contacts. The younger the child, the most likely source of infection is to be found in the home.

Price (1948) quotes Keyne who showed that home infection is high amongst young children, while extra-domiciliary infection increases in older childhood. In well-to-do families such a disaster may arise from contact with an infected maid or servant. Another very possible source of danger is the grandparent with chronic cough.

Materials and Method

In Chittaranjan Sishu Sadan (which caters for children up to twelve years of age suffering from non-surgical disorders) Mantoux testing of indoor patients is a routine procedure since 1948. Chatterjee (1957) has published details of such study.

On admission, the history of any contact with tuberculous or suspected tuberculous persons is recorded, and after the Mantoux testing the history of contact is re-assessed and further details, whenever available, are gathered.

The present paper deals with the result of analysis of contact history of one hundred consecutive Mantoux-positive patients, starting from the beginning of 1948. Direct evidence that a child has been infected by a certain tuberculous person can never be absolute. Whenever we found that a patient reacting positively to Mantoux test had been in undoubted contact with a person suffering from active postprimary tuberculosis as assessed from clinical history, radiography and positive sputum report in recent months, we regarded that person as the source of infection in the child.

Result

Out of one hundred positive reactors, in forty-two patients only we could definitely trace the source of infection (Table 1). In 12 patients no definite history could be found, because some of them came from the orphanage and in others from lack of co-operation from the parties.

Table 1—Showing the Number of Positive Reactors to Mantoux Test in Different Age-Groups with Sources of Infection

Age (years)	No. of positive reactors	Known source of infection	
		No. of cases	Per cent
0— 3 ...	30	10	33·33
4— 6 ...	21	8	38·09
7— 9 ...	26	14	53·84
10—12 ...	23	10	43·47
Total ...	100	42	42·00

It is evident from Table 1, that out of one hundred positive reactors in only forty-two (42 per cent) the source of infection could be found. If twelve patients in whom no definite history could be found are excluded, the percentage with known source of infection becomes greater.

Table 2 shows that in the age group 0-3 years, the mother contributed 60 per cent of cases of infection, the father 10 per cent and both parents another 30 per cent, so that 100 per cent of the incidence of infection in this group could be traced to the parents.

In the age group 4-6 years, each parent contributed 37·50 per cent (total 75 per cent) of the incidence while another 12·5 per cent was contributed by other family members. So intrafamilial source contributed 87·5 per cent of the incidence of infection.

In the age-group 7-9 years, the mother contrited 28·57 per cent, the father 42·85 per cent, both parents 7·14 per cent, and other family members 7·14 per cent. So in this age group intrafamilial source contributed 85·70 per cent of infection.

In the age-group 10-12 years, 40 per cent of infection came from the father, 10 per cent from both parents jointly and 20 per cent from other family members. So in this group also intrafamilial source contributed no less than 70 per cent of infection.

Discussion

It is common experience for tuberculosis workers to find that definite history of contact is obtainable only in a relatively small proportion of the patients with tuberculosis. This is due to the desire of the family to conceal such facts to avoid social difficulties and also to ignorance about its value to the physician.

Thus Lincoln (1947) and Bentley *et al* (1954) found history of contact only in about 50 per cent of their cases. Waddel *et al* (1954) and Robinson and Young (1954) found history of contact in 68 per cent only. Bentley *et al* (*loc. cit.*) observed that the percentage would be higher if proper care is taken to evaluate the contact history in each case.

Table 2—Showing Known Sources of Infection in Different Age-Groups

Age (years)	Total No. where source of infection is known	Source cases											
		Mother		Father		Both parents		Family member other than parents		Same house but different flat		Neighbours and others	
		No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
0— 3 ...	10	6	60	1	10	3	30	0	0	0	0	0	0
4— 6 ...	8	3	37·50	3	37·50	0	0	1	12·5	1	12·5	0	0
7— 9 ...	14	4	28·57	6	42·85	1	7·14	1	7·14	2	14·28	0	0
10—12 ...	10	0	0	4	40·0	1	10·0	2	20·0	0	0	3	30

In our series, we could get definite history of contact in only 42 per cent of cases (excluding doubtful cases or doubtful histories of contact). From our experience we also found that persistent effort often revealed contacts not previously admitted.

Wallgren (1952) stated that in young infants and babies, the source of infection could be easily found out, but in older children it was often difficult or impossible to do so. In the series under review, surprisingly enough, we found a different result in that under 3 years of age only in just over 33 per cent there was definite history of contact and in the age-group 4-6 years in only about 38 per cent, history of contact could be elicited. This is difficult to explain. As in the younger age-group, in the vast majority of cases the parents themselves are the sources of infection (Table 2), they deliberately withhold the history, partly to avoid social difficulty and partly from a feeling of guilt. In the older age-group, however, in a large percentage of cases the source of infection is other than parents, and the history of contact in these cases is readily obtainable. Moreover we found on many occasions that during admission of the child, the history of contact was denied by the parents. Subsequently when the baby reacted positively, we again interviewed the parents (particularly the mother) and explained the whole situation with definite assertion that the correct history of contact was essential in the interest of the baby, particularly because of the availability of streptomycin and other drugs which were likely to ensure a better chance of complete cure. On many occasions we could obtain a correct history of contact with tuberculous patients (very frequently either of the parents) often with an assurance that this information will not be divulged. Many parents explained that if it were known to others, they would have to face extreme difficulty in finding accommodation for the family. We gradually found that in subsequent years, we could get more histories of contact in the younger age-group compared to what we obtained in the beginning of our study.

Coming to the sources of infection in different age groups, Wallgren (*loc. cit.*) stated that in case of young infants and babies, in 35 per cent the source of infection was the parents and in 30 per cent close relatives.

Nelson (1954) stated that infection in children below age of 5 years was most likely to occur at home, either from members of the family or other residents or from domestic servants ; and infection in older children was most likely to be acquired from contacts outside.

In our series, we found that under 3 years, infection in 100 per cent of cases came from parents and between 4-6 years parental source contributed to no less than 75 per cent of infection. In age group 7-9 years we found that intrafamilial source contributed to no less than 85 per cent of infection, and even in the age group 10-12 years to 70 per cent. Probably because most of our patients came from low economic group, without financial resources for appointing maids or servants, this source of infection is not reflected in our series.

It is obvious from the study that in our country the main source of tuberculous infection throughout childhood period is the family itself. This is significant because any anti-tuberculosis measure to be successful and economical, must aim at preventing natural infection in the most vulnerable age group, i.e., infants and young children, by B.C.G. vaccination and other available methods. Records of paediatric wards are available for locating the source of infection without delay.

Summary and Conclusion

Analysis of human source of infection in one hundred hospitalised children, reacting positivelv to Mantoux test has been presented.

It has been shown that throughout childhood in our country, in the vast majority of children, the source of infection is to be found in the family.

Reason has been put forward to explain failure in securing history of contact in larger numbers in the younger age-group.

A plea has been made for utilisation of records of paediatric wards in any campaign against tuberculosis.

Acknowledgment

The author expresses his sincere thanks to the medical and nursing staff of the Chittaranjan Sishu Sadan for their co-operation. He also expresses his gratitude to the Director, Chittaranjan Seva Sadan College of Obstetrics, Gynaecology and Child Health, for allowing him to utilise the hospital records.

References

Bentley, F. J., Greybowski, S. and Benjamin, B.—Tuberculosis in Childhood and Adolescence, 1954, NAPT, London.

Chatterjee, D. N.—*J. Indian M. A.*, **29** : 180, 1957.

Lincoln, E. M.—*Am. Rev. Tuberc.*, **56** : 75, 1957.

Nelson, W. E.—Textbook of Pediatrics, 1954, Saunders, London.

Price, D. S.—Tuberculosis in Childhood, 1948, Wright, Bristol.

ROBINSON, A. AND RO, Y. H.—*Am. J. Dis. Child.*, **87**: 139, 1954.
WADDEL, W. W., BOOKER, A. P., GREGORY, W. C. AND BOBBITT, O. B.—*Ibid*, **87**: 273, 1954.
WALLGREN, A.—Fançoni and Wallgren's Textbook of Paediatrics, 1952, Heinemann, London.

SECONDARY ACHALASIA CARDIA

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Achalasia cardia is a condition in which there is a failure in the relaxation of the lower end of the oesophagus when the food is swallowed. This naturally delays the passage of the meal from the oesophagus into the stomach. It is one of the commonest causes of dysphagia in middle-aged persons and should be differentiated mainly from carcinoma and peptic oesophagitis. By radiological investigations and oesophagoscopy one can arrive at a correct diagnosis in most of the cases, though occasionally epidermoid carcinoma may be mistaken for achalasia cardia.

The pathogenesis of this condition has been the subject of much study and at present there are various theories to explain the aetiology and pathology of this condition. So far, none of them could explain the pathogenesis of all the cases and due to this, the ultimate result of treatment is also disappointing in a fairly significant number of cases. The recent studies of Ferguson and Burford (1960) indicated that they could get satisfactory results in only about 80 per cent of their patients when they used the modified Hellar operation in all of their 56 cases. In several other series also the final results have been unsatisfactory in about 20 per cent of the cases. In order to reduce the percentage of such poor results, it has been suggested that pyloroplasty should be done as a routine to minimise the possibility of regurgitation of acid gastric juice into the oesophagus. Wangensteen (1957) also expressed his disappointment with the standard Hellar procedure and recommended an extensive cardiomyotomy and pyloroplasty to improve the results.

From these suggestions it becomes clear that in a good number of cases it is not only the achalasia that causes various symptoms but there exist some other conditions in the stomach and the neighbouring structures which are responsible for the production of secondary achalasia. Unless these primary causes are removed, the patient continues to have symptoms. It seems that in most of these cases, achalasia cardia is a compensatory mechanism to prevent the regurgitation of acid gastric juice into the oesophagus and therefore, in such cases simple cardiomyotomy alone may be harmful unless a drainage operation like pyloroplasty is performed in addition.

From these observations achalasia cardia can be broadly divided into two distinctive groups, e.g., idiopathic and secondary. In the former variety one cannot find any apparent aetiology for its development; whereas in the latter, there is always some primary cause such as disease of the stomach, biliary tract, pancreas, etc., which might have reflexly resulted in spasm, sclerosis and achalasia of the oesophagocardiac junction. Recently we came across two such patients of typical secondary achalasia cardia in whom the treatment of both primary and secondary condition had to be carried out to produce a lasting relief. Both these patients were middle aged women, and both had recurrent attacks of cholecystitis and dysphagia. Because of these, interresting combinations of diseases we thought of reporting these cases.

CASE REPORTS

CASE 1—Mrs. R.P. aged 35, was admitted to the Hospital with complaints of recurrent attacks of pain in the right hypochondrium and a feeling of obstruction in the passage of food. The former trouble which she had for the last 15 years, has become more or less constant instead of isolated attacks and limited to the epigastric region. The difficulty in swallowing and feeling of obstruction just above the stomach have started 3 years ago. She could, however, take in fluids with relatively less difficulty than solids. Occasionally, she used to get sudden regurgitation of fluid into the mouth, especially in the middle of the night. With these complaints she sought admission.

There was nothing significant in the previous or personal history excepting that she had been married to an old man and she had no children. The menstrual history revealed menorrhagia for the last 5 years.

On examination she looked intelligent with pleasing manners. She had a weak constitution and appeared a little anaemic. The abdomen showed the gallbladder area somewhat more tender than the other regions; but no swelling could be palpated anywhere. The rest of the systems did not reveal any positive findings. No abnormality could be traced in the plain film of the abdomen. The cholecystography showed incomplete evacuation of the gallbladder after a fatty meal. The x-ray examination of the oesophagus after barium swallowing revealed an enormously dilated oesophagus with complete narrowing of the cardiac end. No positive finding could be elicited in the laboratory examinations.

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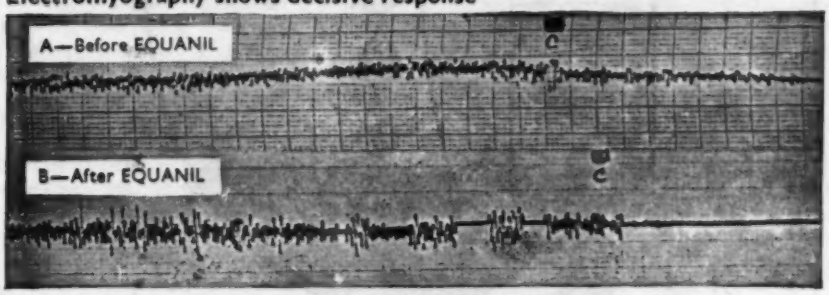

Tracing A, made before medication, reveals a marked action potential following the command to relax at point C. Note the difficulty and slowness with which the patient responded.

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1. Dickel, H. A., et al.: West. J. Surg., April, 1956.

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A diagnosis of achalasia cardia was made. After preparing the patient thoroughly a left upper paramedian incision was made and the abdomen opened. The triangular ligament of the left lobe of the liver was cut and the peritoneum over the oesophagocardiac junction was incised. The oesophagus was gradually separated from the surroundings and lifted up. A modified Hellar's procedure was carried out in which the muscles and submucous layers of the oesophagocardiac junction were cut longitudinally for a distance of 10 cm. on the oesophagus and stomach. At the end of the procedure the mucous membrane bulged freely between cut muscle fibres. After completing this procedure the abdomen was explored. The gallbladder was found full of small faceted stones of the size of split pea. The wall of the gallbladder was chronically inflamed. Hence a cholecystectomy was carried out as usual. As the common duct did not contain any stone, it was not explored. On further exploration it was also found that the patient had multiple interstitial fibroids which might have been the cause of menorrhagia. However, in view of the upper abdominal incision hysterectomy could not be undertaken in the same sitting. The patient stood the operation well and had an uneventful recovery.

She was gradually allowed to swallow liquids, semi-solids and solid foods and she could do so without any difficulty. She remained completely asymptomatic for the last 2 years and regained her lost weight.

Comment—From the history, physical examination and the operative findings it becomes clear that the patient was originally suffering from chronic cholecystitis with cholelethiasis for the last 15 years, and she developed symptoms of achalasia cardia only during the last 3 years. It was surprising to see that since she developed achalasia cardia, the attacks of bilitary colic had become much less in number and severity. The incidental finding of fibroid uterus seems to have no relationship with that of cardiospasm or cholecystitis.

Case 2—Mrs. P.K., aged about 40, was admitted to the hospital with the chief complaint of recurrent attacks of pain in the upper abdomen for the last 8 years. About a year ago, she also started feeling some difficulty in swallowing, especially of solid foods, for which she got herself admitted to the hospital.

On examination, she was found to be a fairly well-nourished middle-aged woman with good health. She was highly sensitive and intelligent. Periodically she had also menorrhagia. She was childless. The examination of the abdomen did not reveal anything except tenderness in the region of the gallbladder.

The results of laboratory examinations of urine, stool and blood were within normal limits.

The radiological investigation of the gallbladder showed multiple small radiolucent stones. The barium swallowing studies of the oesophagus showed a moderately dilated oesophagus with narrowing of the oesophagocardiac junction.

From these findings it was thought that the patient was suffering from chronic cholecystitis and cholelithiasis with secondary symptoms of achalasia cardia. It was decided that only cholecystectomy should be done initially to see whether it alone would give relief to the patient.

Operation—Under general anaesthesia of intratracheal gas oxygen and ether the abdomen was opened by a right paramedian incision and cholecystectomy was performed as usual. There was no evidence of stone in the common bile duct and hence it was not explored. On further exploration of the lower abdomen there were seen multiple small fibroids in the uterus. However in view of the difficulty in exposure no attempt was made to remove them. The oesophagocardiac junction was also palpated for evidence of growth. Since there was nothing abnormal and since we were of the view that dysphagia may be functional, no attempt was made to do Hellar operation, and the abdomen was closed. The patient had uneventful recovery. However her secondary complaint of difficulty in swallowing still persisted. It used to aggravate periodically whenever she had some mental upset. If she took some antipasmodics, such as antrenyl or belladenal tablets, she would get some relief. However, her condition did not improve and hence she underwent another operation in which she had modified Hellar operation through the abdomen. Thereafter she was completely relieved of her trouble and she could swallow everything without any difficulty.

Comments—This is another patient who to start with developed symptoms of chronic cholecystitis with cholelithiasis and then developed achalasia cardia as a secondary complication. However the removal of the primary condition by way of cholecystectomy did not produce any relief to her dysphagia and therefore she had to undergo a second operation. The incidental finding of fibroid of the uterus seems to have no direct connection with the above symptoms.

Discussion

The causative factors of achalasia cardia had been discussed by many workers during recent years. But these causes could not explain the development of the disease in all the patients. However one common feature, which was found in most of these cases, was the instability of their mental condition. Either they were found to be highly intelligent or absolute dullards. So far, we have operated on 8 cases of achalasia cardia out of which 5 were highly intelligent and 3 were found mentally underdeveloped.

It is commonly seen in middle-aged women, though the men of the same age are also affected quite frequently. In spite of this, very few observations have so far been made with regard to its causes, other than neurogenic factors. Though all the causative factors might produce the disease reflexly through the nerves of that region, it would be worthwhile to investigate the factors that would stimulate these nerves.

The two identical cases that have been reported here might throw some light on the sub-

ject. Both the patients were middle aged women, and both had symptoms of biliary colic for some years. They were highly intelligent and were suffering from menorrhagia due to multiple interstitial fibroids. Both were sterile and therefore they had psychological maladjustment in the society. Thus the association of these three clinical conditions namely, achalasia cardia, chronic cholecystitis with cholelethiasis and fibroid of the uterus in middle-aged women, may not be mere coincidence. From the findings of these cases we felt that the recurrent attacks of cholecystitis might have reflexly produced disturbance in the sphincter mechanism. Because, in both the cases the achalasia cardia developed much later than the recurrent attacks of cholecystitis. Development of such an achalasia had helped one of the patients by reducing the number of attacks of biliary colic. The patient reported that after she developed dysphagia she had almost forgotten about the biliary colic, since she got only mild discomfort in the right hypochondrium only occasionally. However, in the second case, mere cholecystectomy did not produce any lasting relief though it did give her some relief initially. This might be explained from the fact that irreversible changes might have already taken place in the sphincter mechanism of the oesophagocardiac junction.

In view of these possibilities which might have reflexly caused achalasia we are of opinion that as far as possible, a complete gastrointestinal and biliary tract investigation must be carried out to detect the other accompanying pathological conditions. Amongst the various diseases, the possibility of chronic cholecystitis and peptic ulcers with pyloric obstruction must be kept in mind.

Based on our experience we are also of the view that the operations through abdominal approach would be preferable to the thoracic approach. With the help of modern anaesthesia supplemented with muscle relaxants it hardly makes much difference, whether we approach the region through the abdomen or through the chest, so far as the exposure is concerned. But the abdominal approach has many advantages. It does not interfere with the sphincter mechanism of the diaphragm, since one need not cut this muscle at all for exposing the oesophagus. Secondly, one can always explore the entire abdomen, and remove in the same sitting the other initiating factors, such as diseased gallbladder, appendix, peptic ulcer, etc. Lastly, it is well known that the postoperative morbidity and mortality is somewhat higher in thoracotomy than in laparotomy.

Summary

We are of the view that achalasia cardia may be broadly divided into two categories, namely idiopathic and secondary. Whereas the idiopathic variety can be treated by modified Hellar operation alone, the secondary variety needs simultaneous surgical extirpation of the primary cause in the abdomen to give a lasting relief. Two case reports of secondary achalasia cardia have been given to substantiate the above views.

References

Ferguson, T. B. and Burford, T. A.—*Ann. Surg.*, **152** : 1, 1960.

Wangenstein, O. H.—*Surg. Gynec. & Obst.*, **105** : 339, 1957.

PRACTITIONERS' SERIES

EMERGENCIES IN E.N.T. PRACTICE

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There is a wide variety of emergencies in this speciality ranging from a mild harmless epistaxis to the immediately fatal laryngeal obstruction. To cover such a large subject in a short paper would entail too much condensation. Hence only a few common conditions that occur in every-day practice have been included.

The Nose

Injuries to the nose may result in fracture and lateral displacement of the nasal bones. Local tenderness, abnormal mobility and crepitus are usually present. X-ray examination only confirms the diagnosis but does not indicate the treatment. In the absence of external or internal deformity no treatment is required. Arrangements should be made to set the fracture within a few hours of the injury, otherwise rapidly developing oedema will make the diagnosis and treatment difficult. The manipulations should not be put off for more than 10 days. To achieve good cosmetic result surgical experience is essential.

Epistaxis—Apart from fractures epistaxis results from many other causes ranging from nose picking to haemophilia. These cases can be divided into 2 groups: (i) Cases where the bleeding vessel is easily located in the anteroinferior

Read at the 30th Punjab State Medical Conference, Simla.

part of the septum, viz., the Little's area and (ii) cases where the bleeding is from other parts of the nose and it is not possible to see any bleeding point. A head light, a nasal speculum and a nasal spray containing 2·5 per cent cocaine are essential in diagnosis and treatment. The nose is sprayed with cocaine solution and then packed with ½" ribbon gauze soaked in liquid paraffin. After a few minutes the packing is removed and the bleeding vessel is usually located in Little's area. The vessel is now cauterised with trichloracetic acid or silver nitrate 50 per cent. On removing the pack, the haemorrhage may be seen either to have stopped or to be continuing. If however the bleeding has not ceased and if the flow is not profuse, packing is generally avoided, because it only helps to produce ulceration of the mucosa and on removal of the packing the nose bleeds again from some other point or points. The patient is better put to bed and given suitable doses of morphia which lowers B.P. and calms the patient. The surgeon should be composed and reassuring to relatives and avoid fiddling too often with the nose on relatives' request as otherwise the bleeding does not get a chance to stop. If the bleeding does not stop, one should consider giving a small blood transfusion. If the patient has to be referred to a specialist for electric cautery, it should not be delayed beyond 24 hours, as otherwise it would be too late to locate the bleeding vessel. Investigations for elucidating the cause should be kept to the minimum, to avoid disturbing the patient.

Foreign bodies—These are commonly inserted into the nose by children. If of vegetable origin they tend to swell up. Foreign bodies cause unilateral blockage, discharge and bleeding. They are not dangerous though parents feel quite alarmed. With a head light and the child held securely, it is quite easy to bring it forward with a hook. One should try to get above and behind the foreign body. One must take every care not to break the foreign body into pieces or push it into the roof of the nose. It may inadvertently be pushed into the nasopharynx where a finger should be kept if general anaesthesia is used. Catching with forceps should be avoided. If forgotton and left in the nose a small foreign body may form the nucleus of a rhinolith.

Flies may lay eggs in the noses which are the seat of atrophic rhinitis or syphilis. Patients come with epistaxis, obnoxious stench and maggots crawling from the nose. The bridge of the nose may show cellulitis. It is quite easy to treat these cases and there is no need to refer them to a specialist. Irrigation and packing with chloroform-turpentine oil mixture, diluted 25 per cent kills the maggots in 3 to 4 days. Penicillin should be administered to prevent meningitis.

The Throat

Sharp linear foreign body like small fish bones, ears of wheat or corn, or splinters may get stuck in the throat in the tonsils or lingual tonsils and cause pricking pain and extreme annoyance to the patient. If left over they may cause an abscess locally. With a proper head light, a tongue depressor in left hand, and a long artery forceps in right hand, the foreign bodies are easily removed.

Ulcers in the mouth and throat are quite painful and to achieve a cure correct diagnosis is essential.

Acute follicular tonsillitis, diphtheria and Vincent's angina present a diagnostic triad. In diphtheria the child is usually between 2-5 years. The temperature is higher in acute tonsillitis and very slight in Vincent's angina. However toxaemia and prostration are maximum in diphtheria. On examination, in tonsillitis there is an unusually patchy exudate confined to the tonsils, while in Vincent's angina there is a ragged ulcer covered with greyish membrane. The lesion is usually confined to one of the tonsils. In Vincent's angina there is the tell-tale evidence in the associated gingivitis and ulcers over the palate and tongue. In diphtheria there is a continuous greyish white membrane which extends beyond the tonsils to the palate, uvula, pharynx and larynx. Vomiting and albuminuria are also more frequent in diphtheria. In every doubtful case a smear and culture examination should be made. If the culture is negative but clinically it looks like diphtheria it is safer to administer antidiphtheritic serum. Out of all these conditions it is important to exclude diphtheria because even a few hours' delay in giving antidiphtheritic serum (A.D.S.) may weigh the scales against the patient. Sometimes a misdiagnosis of diphtheria is made in patients discharged after tonsillectomy. The history of a recent tonsillectomy should clear up the diagnosis.

Quinsy—A sore throat after 3 to 4 days passes into a peritonsillar abscess when the patient locates severe pain on one side and is unable to open the mouth, and saliva dribbles out of his mouth. He feels as if he has a hot potato in the mouth. There is swelling in front of and above the tonsil. The uvula points away from the side of the quinsy. It is better to aspirate the abscess as it is safer than using a knife. The aspiration must be effected without any spilling into the

pharynx. Penicillin given for a week cures the condition.

Retropharyngeal abscess in a weakly infant presents with croupy cough, stridor and dysphagia. The posterior pharyngeal wall is pushed forward, sometimes between the tonsils. Here also aspiration is safer than incision. In both the above two conditions anaesthesia is not desirable. In quinsy, specialists are recommending tonsillectomy straight away.

Bleeding after tonsillectomy—Reactionary type of bleeding may occur within a few hours of the operation and the family doctor may be expected to detect it and inform his specialist colleague. The child looks pale and collapsed. He continually keeps swallowing the blood. He vomits altered blood. The pulse is very fast and thready. On looking into the mouth, the throat is found full of blood or the blood may be confined to one side of the throat in the tonsillar fossa. If possible a gauze swab soaked in H_2O_2 and held in forceps is placed in the fossa and the child asked to hold it between the teeth. The operation theatre should be immediately made ready and the specialist informed. No sedative should be administered unless the bleeding has been controlled. Arrangements for blood transfusion should be made as it is difficult to judge the amount of blood lost and fatalities often occur if blood is withheld. Secondary haemorrhage occurs after 3 to 10 days. It is usually in the form of slight oozing from one fossa. The blood clot should be removed unless it is too small, and a suitable dose of morphia administered. The tonsillar fossa should be interfered with as little as possible, because interference only induces bleeding.

Laryngeal obstruction—When sudden in onset it is one of the gravest of emergencies. Death is the rule, unless the subject is lucky to have a doctor at hand. These remarks refer to angioneurotic oedema and foreign bodies getting impacted in the larynx. The former condition is diagnosed by previous history of fleeting oedema affecting the lips and face or presence of concomitant oedema on the face. This is best treated by immediate injection of adrenaline or one of the antihistaminics. For foreign body if the subject is a child he should be held by the feet with the head down and his back slapped. This simple procedure may help expel the foreign body. If a doctor is at hand immediate tracheotomy should be performed. Otherwise the child should be rushed by the fastest means to the nearest surgical centre. This rush is worthwhile, as sometimes the obstruction is not so complete and the child reaches the doctor in time to have a tracheotomy done to save his life.

Gradual laryngeal obstruction—It is commonly seen in diphtheria in children and laryngeal carcinoma in adults. The patient is seen to be fighting for breath. His intercostal spaces, epigastrium and suprasternal notch are indrawn with every breath. He is very restless. One can hear him creaking from a distance. He is cyanosed. These are late symptoms of laryngeal obstruction. One should recognise the need of tracheotomy much earlier. However patients are brought in this stage and it behoves a medical practitioner to refer such a case straightway to a surgeon for a tracheotomy without temporising any further, or if he thinks that there is no time to be wasted an immediate tracheotomy should be done by him on the spot. In such an acute emergency the child does not require any anaesthesia, but an adult should be given local infiltration anaesthesia. The child should be laid across the table with the head hanging down and supported in midline by an attendant. The larynx is held between the left thumb and middle finger and the index finger is fitted into the notch below the thyroid cartilage. With the knife or blade in right hand one cuts right down to the trachea and opens it. There is no vital structure in the midline that one can cut. Control of bleeding can wait till the trachea has been opened. Under such circumstances one should not hesitate. Hesitation may cost the patient his life and the medical practitioner life-long repentance. It is one of the simplest and most gratifying operations. The awe that hovers around it is due to our ignorance. Every medical student should be made to see a few elective tracheotomies and should be encouraged to watch emergency tracheotomy whenever an opportunity presents. However, if it can be avoided, tracheotomy should never be left too late to be done, because apart from death if the patient lives certain complications following a hurried tracheotomy may lead to life-long disability.

Food and air passages—Within a few hours of birth a suckling may choke itself and turn blue on its first feed. This should put everybody on guard that we may be dealing with a tracheo-oesophageal fistula. No further feeds should be given and the infant should be rushed to the nearest thoracic centre to exclude such an anomaly or if present to get it treated immediately, otherwise there is no hope for the little one to survive.

Foreign bodies in food and air passages—Most of the patients are children and are reported by their parents to have swallowed a small object which they have been holding in the mouth. It is after all for the doctor to decide where the foreign body is. If it is in the larynx the child

may be found coughing, choking and turning blue or probably dead already. If the foreign body has passed down into the tracheobronchial tree there is time for the parents to tell that the child had a sudden bout of coughing and choking followed by noisy breathing and hoarse voice. One can see the child breathing hard, having both inspiratory and expiratory stridor and looking very ill. This situation is next in seriousness to a laryngeal foreign body specially if it is vegetable in nature as it gives rise to a severe irritant reaction in the whole tracheobronchial tree. If the parents say that the child cannot swallow anything or finds it painful to swallow but did not have any respiratory symptoms, one can be certain that the foreign body has gone into the oesophagus. A foreign body in this situation is least harmful unless it is a sharp penetrating variety. Nevertheless it has to be removed within a reasonable time, as otherwise it may ulcerate the oesophagus and pass out giving rise to a peri-oesophageal abscess. Round smooth foreign bodies like a coin can be tampered with for a few days in the hope that it will pass out by itself. The use of coin-catcher or the probang has been responsible for quite a few deaths. Now-a-days oesophagoscopic removal under direct vision has completely changed the outlook. Even if the patient has to travel a day or two to get the oesophageal foreign body removed, he should be sent to a suitable E.N.T. or thoracic centre; as removal of foreign body from the oesophagus is fraught with danger, even to life. If the patient has to travel some distance to have a bronchial foreign body removed, one must do a tracheotomy to make the journey safe. A foreign body, forgotten or unnoticed, leads to prolonged disability, viz., lung abscess.

The Ear

The ear is a favourite site for foreign body. If animate, e.g., the insects, maggots, etc., it is best to drown them in oily fluids like liquid paraffin, and then syringe them out. For maggots one may use chloroform with advantage. Inanimate foreign body can be syringed out also. However one should avoid syringing vegetable foreign bodies, because if one does not succeed it swells up rendering subsequent attempts at removal more difficult. When syringing fails, one should take out the foreign body with a hook which should pass above and behind the object. One should not use forceps, as it only drives the foreign body in. If necessary one should administer general anaesthesia. Do not injure the tympanic membrane. The foreign body by itself is absolutely harmless. In fact, it can lie there dormant for months or years, or may give rise to an otitis externa at the most. It is the amateur's attempts that may cause more harm than good. These cases should always be referred to a specialist.

Traumatic perforation resulting from hairpins, attempts at removal of wax or foreign body or after a slap on the check is attended with bleeding and deafness. Even though the attendants may be anxious and exacting, masterly inactivity should be the routine. One need not disturb the blood (not out of fear of introducing infection) or the scafolding over which the perforation is going to heal. Patients should be warned against using oily drops, or allowing entry of water in bathing, etc. They should be given procaine penicillin 4 lacs daily for 6 days. One should presume the drum to be ruptured, the perforation if small usually heals within 3-4 weeks.

Earache can be so severe as to keep the patient and doctor awake throughout the night. The commonest causes are impacted wax, otitis externa, furuncle and acute otitis media. Unless impacted wax is removed the pain will not disappear. Give penicillin intramuscularly and soften the wax with liquid paraffin for 3 to 4 days or longer if permissible and then remove the wax. Furuncle is a localised form of otitis externa. Both these conditions are associated with tenderness of pinna, narrowing of the meatus rendering specula examination difficult and painful. However hearing is normal and the discharge is scanty. In acute otitis media there is no tenderness around the ear, discharge is profuse and membrana tympani is easily seen to show a perforation, and deafness is marked. With antibiotics all these conditions get cured quickly. Early myringotomy is required to preserve hearing. Also the incidence of acute mastoiditis has become very low. So very rarely one is required to perform a mastoidectomy. After obtaining the opinion of the specialist most of these cases can be handled by the general practitioner. On the other hand, if a patient with chronic aural discharge develops vertigo, meningitis, facial paralysis or symptoms of brain abscess, he should be referred to a specialist without delay.

Bell's palsy if seen within a few hours of onset can be cured within a few hours by performing cervical sympathetic block straightway. If this is not possible the patient should be referred to a specialist for facial nerve decompression within 4 weeks of onset. Sudden deafness can be very upsetting. Wax and eustachian catarrh, the common causes of onset, are most easily remediable, the former by syringing out the wax and the latter by politzerisation.

SPECIAL ARTICLE

THE MEDICAL SCIENCES AND THE INDIAN SOCIETY

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The Indian Society

The four hundred and thirty-eight million inhabitants of India constitute the Indian society. The society is conceived as an ever-changing product of the complex interaction amongst the multitude of groups constituted by individuals (Toynbee, 1956). During the earlier years of his existence, an individual derives the co-ordinates for his mental processes from the different social groups. Later, this socially nourished individual mind, though still getting contributions from the society, embarks on an independent growth. The useful experiences thus acquired by the individual then influence the ideas of the social groups which, in their turn, influence the newer generations to make them more adapted to the existing environment. This feature of the social groups acting as an ever-expanding reservoir of positive human experiences has caused a very rapid development of an entirely new form of extremely powerful adaptive processes which have completely overshadowed the much slower and expensive genetically transmitted adaptive mechanisms which are predominant in the rest of the biological world. The evolution of the human brain thus makes a sharp departure from the general pattern of biological adaptation to environment forces. Through the thousands of years, human groups have attempted to discover ways and means of exploiting the resources of the world for their own use. Spectacular successes of the human inventive genius have, in their turn, stimulated the human mind to acquire still more far-reaching achievements.

This progressive increase in the quantum of human knowledge has continued through the ages. It has given gigantic dimensions to the rate of progress in the different fields of human knowledge in recent years. The very intensity of the progress in the fields of learning has led to its phenomenal diffusion into the entire human society. It is no longer possible for very small groups to monopolise learning.

The consideration of all these dynamic forces resulting in the evolution of the modern human society has given an entirely new perspective to the historical evolution of one of its important components—the Indian society. After centuries of almost complete isolation from the outside world, the Indian society suddenly finds itself face to face with the progressive forces of science and technology of the modern world (Panikkar, 1959). The gigantic society which till recently had been struggling for its very existence against powerful forces of foreign domination was suddenly injected with revolutionary ideas of social change through the powerful channels of mass communication. To the Indian society it was an exciting revelation of the scope of progress. At the same time the very intensity of the external forces was a challenge to the moorings on which it had stood steadfast through thousands of years. The preliminary threats of its being engulfed by the dazzling forces of western civilisation were met all through nineteenth century by its evolving far-reaching modifications in its way of life, without compromising the more fundamental values which are still a source of strength to the society. In fact, this selective assimilation provided the motive force for the struggle for freedom in the first half of the present century (Panikkar, 1959). Meanwhile, however, the forces of social coercion have multiplied several-fold due to the extensive developments in the science of mass brain conditioning by various powerful propaganda techniques (Huxley, 1959). This challenge was once again met by the inherent vitality of the society. But at the same time it underlined the most urgent necessity of replenishing its strength by adopting even more drastic modifications in the social structure.

Necessity of a National Plan

More than 80 per cent of the Indians lives in villages where the most elementary necessities of normal life like food, drinking water, shelter, clothing, etc, are far from being adequate even from the lowest standards of requirements (India, 1960). Even in the urban areas, a very big proportion of the population lives either literally on the streets or in slums, where the conditions are similar to or even worse than those in the villages (Mazumdar, 1959). The leaders of independent India have met this problem by incorporating in the constitution revolutionary measures for the welfare of the masses (India, 1960). This formed the basic frame of reference in the formulation of India's National Five-Year Plans. A real plan is to be visualised as an auto-catalyst ; it stimulates a certain positive change in the society, the product of which, in its turn, acts as a more powerful stimulator. Such a plan is of vital importance for reactivating the colossal mass

which constitutes the Indian society. Experts of economic dynamics of underdeveloped countries describe the present economic situation in India as a circular cumulative causative phenomenon, where poverty causes suffering, which leads to exploitation, leading to aggravation of poverty (Myrdal, 1954). An intense effort devoted along the right lines is needed to turn this negative vicious circle into a productive self-generating cycle. This phase is the 'take off' phase of the development of an underdeveloped economy (Myrdal, 1954). Thus, for the success of the Indian plan we need gigantic resources which have to be suitably channelled to offer the maximum possible rebound momentum for its re-injection into the next phase of the plan. Many of the prosperous countries of today have attained their prosperity by very expensive and wasteful methods entailing colossal human suffering. In some, it consisted of unscrupulous and inhuman exploitation of the lower classes and of the "subject" races (Panikkar, 1959), while in some others there was forcible mobilisation of the masses either by brute force, or through the more recently developed methods of selective functional cerebral decortication (Huxley, 1959). Both these methods are inimical to the dynamic trends of the Indian society. The Indian approach is thus a momentous experiment in the growth of a society.

The desperate condition of the vast majority of this massive Indian society combined with our desire to apply both a rational and a humanistic approach calls for a very special method. A well-planned and controlled development project might start a chain reaction which would instil a powerful sense of awakening in this dormant human concourse, gradually leading to tremendous increase in the material and cultural wealth of the society as a whole. Injudicious planning, on the other hand, might further accentuate the sense of frustration and demoralisation in the society. It could very well prove to be the last straw on the camel's back. As has been shown in other societies, this latter method of social change might prove to be an enormously more costly way of achieving progress of the society.

Medical Sciences and National Planning

In the context of this form of social planning, the role of the medical sciences, as of any other branch of science and technology, is determined in terms of its contribution towards the development of the society as a whole.

In the National Plan, priorities must be allotted to the different health projects strictly on the basis of impact they (the projects) are going to have on the rate of progress of the society as a whole. Human considerations should form the guiding force in fixing such priorities, but it must not be allowed to get degenerated into hollow sentimentalism. Investments in high priority projects will pay very rich dividends, which can later be used in meeting the cost of the projects which had to be waived because of their relatively lesser importance. This social orientation of the medical sciences gives a new perspective to the health problems. Spectacular progress has been made in almost all the fields of the medical sciences. But the application of these results have a social bearing only in the context of a particular stage of socio-economic evolution. The invention of the artificial kidney and the remarkable advances in cranial and cardiac surgery, for instance, are of little value to a society where millions die of communicable diseases, malnutrition, obstructed labour and other such maladies. The control of such simple causes of mortality and morbidity alone can pave the way for adoption of more complicated and costly projects. Otherwise, as unfortunately is prevalent in the country today, the medical sciences will serve only a microscopic percentage of the society which already forms the most privileged class. This, certainly, is not in tune with the concept of the socialistic pattern of the society (Mazumdar, 1959). Social planning in medicine must be done within the framework of the overall national social plan which is committed to do the greatest good to the greatest number.

Social Reorientation of the Modern Medical Sciences

The incorporation of the health projects within the framework of the National Plan provides a great challenge to the medical social planner. It is not adequate only to increase the quantum of allocation in a set up which was originally framed to serve the needs of the British military and civil personnel and a mere handful of the richer section of the 'native' population (Leading article, *Lancet*, 1960 ; Editorial, *J. Indian M. A.*, 1960). The political changes have very materially altered the frame of reference for social welfare projects. The execution of such a social policy calls for total overhauling of our concepts about research, teaching, and practice of preventive and curative medicine. All these aspects are intended to acquire radically different parameters in order to be applicable to the vast masses that constitute the Indian society.

The methods of the medical sciences are to be adjusted to the needs of the Indian society. This

basic reorganisation of the medical concepts on the basis of their applicability and acceptability to the common Indian, will bring about very promising returns from the resources which are conventionally invested to maintain the so-called service programmes for immediate short-term alleviation of suffering. Without any basic alteration in the allocation, such a framework, based on judicious blending of curative and preventive medicine, might cause a sizable impact on the control of many of the prevailing diseases. Again, if a more elaborate disease control project is called for in the interest of the broader national plan, such a socially oriented medical machinery is going to prove very economical in executing such projects. This study of medical sciences in relation to groups of human beings forms the basic concept of social medicine (Galdston, 1959).

Social Medicine and Medical Education

Medical education is closely linked to the trends in medical practice and medical research. In a developing society the contents of medical education should be flexible to cater to the needs of a changing social structure. Although with the ultimate social rejuvenation it might be possible to utilise all the advanced techniques of medical care and carry out fundamental research in various fields, perhaps the first step, which might be helpful in attaining such a social triumph, is to adapt the modern knowledge in medical and public health fields to the prevailing social and economic environment. The student should be given a clear idea about the dynamic trends of the society, on the basis of which he is to grasp the fundamentals of medical sciences, both curative and preventive. The society would gain enormously if our undergraduate medical students were to learn how to tackle and prevent conditions like postpartum haemorrhage, strangulated hernia and acute gastroenteritis under the prevailing rural conditions. Such a form of medical education should be given overriding priority over topics like ballistocardiography, cosmetic plastic surgery and electrophoretic pattern of the plasma proteins, etc. The department of social medicine should thus influence all the other branches of medical science to reorientate the teaching in those subjects in the context of the demands of social planning.

Social Medicine and Medical Research

Here again the emphasis shifts from academic fundamental research to applied research. The recent study of the comparison of domiciliary and sanatorium treatment of pulmonary tuberculosis carried out by the Tuberculosis Chemotherapy Centre, Madas, is a typical instance (Tuberculosis Chemotherapy Centre, 1959). The data provided by this study must bring about a radical reorientation of the ideas of the planners about tuberculosis control programme. Such a pattern of research in social medicine can be extended to other medical problems. Additional data for social planning could be obtained from various sociological studies which can determine the extent to which the epidemiologically effective control measures are socially applicable and acceptable to the bulk of the society.

Research projects in social medicine thus cover a vast range of subjects. They must not, therefore, get pegged down within the limitations of any one category of investigations. Social medicine is a gestalt of the medical (curative and preventive) and the social sciences (Galdston, 1959). It should, therefore, draw its methodology freely from all such sources (Sand, 1952). The various techniques of sociological and epidemiological surveys form an important means of obtaining data for social planning. However, care must be taken in understanding very clearly the limitations of such methods (Mills, 1959). Firstly, even with well-defined objectives and very precise methods of study, the conclusions drawn from such surveys are applicable to conditions under which they were conducted (Mills, 1959). Secondly, some of these investigations require considerable study of population, widely scattered, requiring considerable time and cost in terms of money and suitable technical man-power.

One type of research which appears likely to be very rewarding in social medicine is what in warfare and in industry has become known as 'operational research'. According to Churchman (1959), the major phases of such a research (in the latter fields) consist of:

(a) Formulating the problem ;
(b) Constructing a mathematical model to represent the system under study ;
(c) Deriving a solution from the model;
(d) Testing the model and the solution derived from it ;
(e) Establishing controls over the solution ; and
(f) Putting the solution to work, i.e., implementation.

As adapted to social medicine, the first step consists in very clearly defining the problem. A plan of operation is then formulated on the basis of the best available data regarding the factors (historical, cultural, social, economic, technological, etc.) which would have a bearing on the operation. Such a plan is then put into operation

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(Mills, 1959 ; Cabello, 1960). As the operation proceeds, data are collected according to predetermined plans to assess the results of such operations. These assessment data are then used in modifying or confirming the various assumptions with which the operation started. Such operational procedures are of great importance for social planning in underdeveloped countries. There is an urgent need of launching various projects but the modern scientific data are just not available, immediately or during the next several years. Even when available, there are various limitations to their reliability due to numerous assumptions which form the basis of the data. An operational research project, based on meticulous evaluation of every available relevant datum, incorporating reliable statistical evaluation in course of the various phases of the operation offers a very promising alternative. India's Community Development programme is an instance where inadequate attention was paid to the basic requirements of operational research (Cabello, 1960 ; Dube, 1958). Had greater care been taken in formulating and evaluating the Community Development Programme (including the medical and public health projects), the impact of the programme on the life of the Indian villager would have been far more pronounced than what is observed today after eight years of its operation (Dube, 1958). And, as a corollary to this, the improvement in the standard of living would have favourably influences the state of health of the people.

Medical Practice in the Modern Indian Society

The social bias developing through the socially oriented medical teaching and medical research, would naturally influence the attitude of medical personnel towards the society. However, this would necessarily involve a radical change in the outlook of the top executives towards the health problems of the society as a whole. Then, they are to act as pacemakers for tuning the entire administrative machinery to this basic concept. These changes in the administrative set up must form an integral part of the overall change in our concept of modern medicine in relation to the Indian society.

Conclusion

The Indian society is to be visualised as a massive complex of groups, deeply rooted to the long historical and cultural traditions, yet, at least till very recently, it had been adapting itself to the changes in the environment. The rate of development in science and technology, particularly in mass communications, has been very rapid in recent years. This has posed a great challenge to the Indian society. Welfare of the society could no longer be depended on the totally inadequate and ill-defined 'philanthropy' of charitable institutions and condescending moneyed men. Political changes must be accompanied with radical social changes, if social unrest is to be avoided. This requires a comprehensive social plan, of which medical and public health services form an important component. Medical social planning calls for a total change in the concepts in the teaching, research, and practice in the medical sciences. In the teaching of social medicine, more emphasis must be laid on the adequate utilisation of the already available knowledge for the good of the entire society. The main trend in medical research must be to get such basic knowledge about social medicine. Medical personnel inculcated with such a knowledge about social medicine will, in their turn, determine the pattern of medical practice. And, the administration in medical and public health services must get tuned to this social bias so as to extend the maximum aid to the newly oriented medical and para-medical personnel working in the various health services.

References

Cabello, O.—*J. Am. Statistical A.*, **55** : 454, 1960.

Churchman, L.—Introduction to Operations Research, 1959, John Wily, Chicago.

Dube, S. C.—India's Changing Villages, 1958, Cornell University Press, Ithaca, N.Y.

Editorial—*J. Indian M. A.*, **34** : 464, 1960.

Galdston, I.—The Meaning of Social Medicine, 1959, Harward, Cambridge, Mass.

Huxley, A.—The Brave New World Revisited, 1959, Chatto, London.

India 1960, 1960, Government of India, Delhi.

Leading Article—*Lancet*, **1** : 265, 1960.

Mazumdar, D. N.—Social Contour of an Industrial City, 1959, Asia Publishing House, Bombay.

Mills, C. W.—The Sociological Imagination, 1959, Oxford, New York.

Myrdal, G.—Economic Theory and Underdeveloped Regions, 1954, Duckworth, London.

Panikkar, K. M.—Asia and Western Dominance, 1959, George Allen & Unwin, London.

Sand, R.—Advance to Social Medicine, 1952, Staples Press, London.

Toynbee, A. J.—A Study of History (Vol. 3), 1956, Oxford, London.

Tuberculosis Chemotherapy Centre, Madras—*Bull. Wld. Hlth. Org.*, **21** : 51, 1959.

CASE NOTES

TOXICITY OF CHLORAMPHENICOL IN CHILDREN

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Chloramphenicol is the drug of choice in the treatment of typhoid fever. It has radically altered the prognosis in enteric fever and the majority of patients improve rapidly and without any mishap. Indications for administration of chloramphenicol in paediatric practice are increasing considerably and the drug is being used in every-day practice, sometimes even indiscriminately. However, as with other antibiotics, side-effects and toxic reactions are being reported with increasing frequency particularly following indiscriminate use of chloramphenicol but sometimes even with small dosage. The conditions in which the drug is used very often, with varying success are typhoid fever, whooping cough, influenzal meningitis, etc.

We present here 4 cases of chloramphenicol toxicity admitted in the paediatric department of the Sassoon Hospitals, Poona, in a short period of 4 months. Chloramphenicol was used for the treatment of enteric fever in all these 4 cases before admission in the hospital.

CASE REPORTS

CASE 1 :

Aruna, a girl aged 11 years, was admitted on 25-6-1960 in the paediatric ward for continued fever for 3 weeks, sore throat, bleeding gums, haematuria and purpuric spots all over the body. She was treated outside as a case of typhoid fever and was given chloramphenicol, 1 capsule (250 mg.) 6-hourly for 2 days. On the 3rd day she started complaining of sore throat, bleeding from gums and haematuria. The drug was immediately stopped. There was no previous history of bleeding tendency either in the patient or in the family.

On examination the patient was moderately built and nourished and was looking pale. She was toxic and dehydrated. The tongue was coated. The temperature was ranging between 99 and 100·5°F. The throat was congested. There were purpuric spots of varying sizes, over the face and all over the body.

The respiratory and cardiovascular systems were normal.

The spleen was palpable and tender.

Investigations—Hb.—7 g. per cent ; R.B.C.—2·12 mill./c.mm. W.B.C.—1400/c.mm. with polymorphs 22 per cent, lymphocytes 72 per cent, monocytes 6 per cent.

Bleeding time—4 min. 10 secs. ; clotting time —3 min., 5 secs. ; platelet count—1·4 lacs/c.mm.

Bone marrow—normoblastic.

Urine showed the presence of albumin. and R.B.C.

Liver function tests were normal.

Widal test—O and H positive in 1/250 dilution.

Treatment—The patient was given urgent packed cell blood transfusion in parts. Dehydration was treated by giving intravenous fluids. Vitamin B-complex was given daily intravenously. Penicillin was given to combat superadded infection. Prednisone was given orally in doses of 5 mg., 6-hourly. The patient made gradual and complete recovery. The temperature came down to normal. Purpuric rash completely disappeared in 2 days and the patient was discharged on 16-7-1960, 21 days after admission.

Her haemogram at the time of discharge was :

Hb., 12·5 g. per cent ; W.B.C., 6800/c.mm. polymorphs 46 per cent, lymphocytes 52 per cent and monocytes 2 per cent.

Platelet count was 2·34 lacs/c.mm.

This case shows how with such a small dose of chloramphenicol alarming complications could occur.

CASE 2 :

Bharati, a girl aged 5 years, was admitted on 3-6-1960 for continued fever for 15 days, marked stomatitis and glossitis and delirium. The patient was treated outside with chloramphenicol syrup, 1 teaspoonful (125 mg.) 4-hourly for 6 days. After starting treatment with chloramphenicol the temperature was 103-104°F., but 2 days later the temperature range was between 99·5 and 100·5°F. On the 3rd day she became delirious and toxic (the temperature was 99·5°F) and had marked stomatitis and glossitis. The relatives reported that during these 3 to 4 days the patient started looking pale.

On examination the patient was poorly built and poorly nourished, and was extremely delirious and toxic. Pallor + +. Marked stomatitis and glossitis were present.

The respiratory system revealed crepitations on both sides.

The temperature on admission was 99·5°F.

Investigations—Hb.—4 g. per cent ; R.B.C.—1·8 mill./c.mm. W.B.C.—1300/c.mm. with polymorphs 31 per cent, lymphocytes 62 per cent, monocytes 7 per cent.

Bleeding time—3 min. 5 sec. ; Clotting time—7 min. 15 sec., platelet count—1·6 lacs/c.mm.

Urine—normal.

Liver function tests—normal.

Widal test—O and H positive in 1/250 dilution.

Treatment—Same as in Case 1.

The patient made gradual recovery. At first toxicity became less and later on temperature came down to normal on 11-6-1960, i.e., on the 8th day after admission. The patient was discharged on 16-6-60 with Hb. 11 g. per cent, WBC 7100/c.mm. and platelet count 2·2 lacs/c.mm.

In this case the anaemia was marked on admission, and this must have developed very quickly, probably due to toxicity of chloramphenicol.

CASE 3 :

Hari Govind, a boy aged 6 years, was admitted in paediatric department on 18-6-1960 for continued fever, cough and headache of 8 days' duration, irritability for 2 days, and drowsiness for 1 day.

Detailed history revealed the following :

The patient was getting continued fever, headache and cough for 8 days. During the first 3 days he was treated with penicillin with no effect. On the 4th day he was put on chloramphenicol palmitate, 1 teaspoonful (125 mg.) 4-hourly. Prednisone tablet 5 mg. was given 8-hourly. Next day the patient became a little irritable, which was thought to be due to the fever and restriction of diet for 4 days. On the 6th day, i.e., on the 3rd day after chloramphenicol administration the temperature came down to 100°F, but the patient became extremely irritable and began to shout. On the 7th day he could not recognise his parents and started passing urine and stools in bed. The temperature was 99-100°F. Later on he became drowsy and was admitted to the hospital on the 8th day.

On examination the patient was moderately built and nourished. He was extremely irritable and was not allowing examination. He was shouting all the time and could not recognise his parents.

The tongue was thickly coated. He had marked stomatitis with some cracks over the lower lip. There were signs of marked dehydration.

The temperature was 101°F.

The central nervous system showed signs of meningeal irritability though neck rigidity was absent. Photophobia was present and the pupils were equal and reacting to light. Reflexes were normal. Plantar reaction was flexor on both sides.

Cardiovascular system revealed nothing particular.

Respiratory system—Rales and rhonchi present on both sides.

Alimentary system—Spleen was palpable.

Investigations—Hb.—10 g. per cent ; R.B.C.—3·4 mill/c.mm. ; W.B.C.—1700/c.mm. with polymorphs 22 per cent, lymphocytes 76 per cent, monocytes 2 per cent.

Platelet count—2·2 lacs/c.mm.

Widal test—O and H positive in 1/250 dilution.

Urine—Albumin present, pus cells +, RBC +.

Blood urea—27 mg. per cent.

C.S.F.—Proteins 40 mg. per cent ; chlorides 710 mg. per cent ; sugar 55 mg. per cent ; cells 10 cells/lymphocytes.

Progress and treatment—From the history it is clear that after starting treatment with chloramphenicol, the temperature ranged between 99·5° and 100·5°F. But the patient became extremely irritable. His haemogram showed marked leukopenia and there was stomatitis and cracks on the lower lip. Cerebrospinal fluid was normal and hence the whole picture was thought to be due to toxicity of chloramphenicol.

The patient was immediately given a blood transfusion. From next day he started getting watery stools about 10 to 12 times a day. Irritability remained the same. Temperature ranged from 103° to 105°F. The patient was extremely toxic.

On next day (after blood transfusion) haemogram showed : Hb.—12·5 g. per cent ; W.B.C.—6700/c.mm.

Treatment given consisted of (1) Injection of crystalline penicillin 5 lacs 6-hourly. (2) Prednisone, 5 mg. tablets 6-hourly ; (3) I.V. glucose with vitamins C 500 mg. and B-complex 1 ml. to each pint. (4) Injection of vitamin B-complex 2 ml. daily ; (5) Binding mixture (bismuth-kaolin)—2-hourly. On the 3rd day loose motions still persisted. Irritability was the same and now the patient started behaving abnormally with confusion of mind, and delirium. He was passing urine and stools in bed and not recognising his parents. Lumbar puncture was repeated and was again found normal. Treatment given was : (1) Starch-opium enema. (2) Other treatment same as above. On the 4th day diarrhoea was controlled. Mental changes were the same and hence he was put on largactil 25 mg. tablets three times a day.

The temperature touched normal on the 11th day after admission and remained normal throughout. Though the temperature touched normal level and toxicity was absent, his mental changes were the same. He was irritable, shouting all the time, and was not allowing himself to be examined or his bed to be cleaned. He was still not recognising his parents and was passing urine and stools in bed. C.S. fluid was again examined and found normal. The same treatment was continued. Nutrition and electrolyte balance were maintained. On the 18th day after admission, i.e., 7th day after the temperature was normal his irritability diminished. He was now calm and quiet, but was not recognising his parents. On the 22nd day he improved considerably and started answering questions and could recognise his parents. Glossitis disappeared and he was discharged on 8-9-60. The boy made an uneventful and complete recovery. He is attending the outpatients' department regularly and is now perfectly normal in health, with clear and sound mind. He could not remember anything about those three weeks.

This case presents psychic changes, due to chloramphenicol, which persisted for a long time though the toxicity and fever settled long back.

CASE 4:

Raut, a boy aged 5 years, was admitted on 5-11-1960 for continued fever for 8 days. He was not talking and was drowsy for 1 day. He had loose motions. Detailed history was as follows:

The patient was getting fever for about 8 days. On the 4th day his doctor thought him to be a case of enteric fever. He was put on chloramphenicol, 1 capsule 6-hourly. On the 6th day he started getting loose motions about 8 to 10 times a day. In addition to the capsules he was given enterostrept suspension, 1 teaspoonful 4 times a day. Next day the loose motions were controlled. Chloramphenicol and enterostrept suspension were continued. Two days later the patient became extremely toxic and delirious and was not talking. He was unable to recognise his parents. He became drowsy and was referred to the hospital.

On examination the patient was moderately built and nourished. He was extremely toxic, delirious and drowsy; there was pallor (+); and a few purpuric spots were present over the body. The temperature was 101°F. and the tongue was coated. Signs of meningeal irritation were present. The cardiovascular and respiratory systems revealed nothing particular. The abdomen was distended with a doughy feel, and the spleen was not palpable.

Investigations—Hb.—10 g. per cent; W.B.C.—2100/c.mm. with polymorphs 32 per cent, lymphocytes 66 per cent, monocyte 1 per cent and eosinophil 1 per cent.

Platelet count—1·7 lacs/c.mm.; Bleeding time—5 min. 10 sec.; Clotting time—8 min. 10 sec.

Bone marrow—Micro-normoblastic.

Widal test—O and H positive in 1/125 dilution.

Cerebrospinal fluid—normal.

Treatment—He was treated on the same line, viz., blood transfusion, steroids, fluids and intravenous vitamin B-complex. Patient gradually completely recovered, started answering questions and was recognising his parents. This patient also showed cerebral side-effects of chloramphenicol.

DISCUSSION

The dosage of chloramphenicol for infants and children is calculated on the basis of 50 to 75 mg./kg. body weight daily according to the nature and severity of the infection. An initial dose of 50 mg./kg. is given in divided doses every 6 hours, until the temperature becomes normal (usually in about 5 to 6 days). Thereafter the daily dose is reduced to half of the previous dose and gradually tapered off, for a total 10 to 14 days. Shah and Vakil (1955) state that a case of fever not responding to chloramphenicol within a maximum period of six days is not a case of typhoid fever, or is a case of typhoid fever associated with some other disease or with complications.

Cases 2, 3 and 4 were given chloramphenicol in large doses. In the discussion on the complications of chloramphenicol it may be noted that though many toxicity tests are done before a drug is put on the market, subtle and sometimes serious toxic effects are revealed only after the drug is administered for sometime. Safety as gauged by acute toxicity tests on animals, has therefore a very limited significance.

1. *Complications of greater significance* are changes such as glossitis and stomatitis characterised by hyperaemia and increased protuberance of the papillae of the tongue as was observed in Cases 2 and 3.

2. *Complications of gastro-intestinal tract*—Vomiting and diarrhoea, though not so frequent as with aureomycin, were first mentioned by Cramer and Rossi (1953). This is due to the suppression of intestinal flora with superadded secondary infection or new infection by chloramphenicol-resistant microorganisms and especially by *Micrococcus pyogenes*.

Out of 300 patients studied by Mannheim and Alexander (1954), 207 complained of pruritus, 51 had multiple anal fissures, 14 had ulcerative proctitis, and in 5 cases true ulcerative colitis was present. These changes appeared after 1 to 2 weeks of treatment. In 40 per cent of cases there was also diarrhoea of short duration.

Cases 3 and 4 had severe diarrhoea after starting treatment with chloramphenicol.

3. *Inhibition of bone marrow function (blood changes)*—The most serious toxic manifestation of chloramphenicol refers to haemopoietic changes. There may be

(a) A transient depression of R.B.C. and W.B.C.
(b) A true aplastic anaemia which may be delayed.
(c) A thrombocytopenia with purpura.

Any of these may appear even after cessation of treatment.

The presence of the nitro-group in chloramphenicol is probably responsible for at least some of the serious side-effects observed, especially the inhibiting effects on the bone marrow (Schindal, 1957).

Volini (1950) described the first case showing severe granulocytopenia. During the same year Rich *et al* reported a fatal case of aplastic anaemia due to chloramphenicol therapy.

Gill (1950) found that granulocytopenia in conjunction with a normal total leucocyte count was especially prevalent among children. He found increase of mononuclears with a corresponding decrease of neutrophils.

Hodgkinsons *et al* (1952) in England conducted a survey in order to determine the relationship between blood disorders and the use of chloramphenicol. 31 cases of pathological blood and bone marrow changes after the use of chloramphenicol were reported in the survey. It is particularly striking in this study how often children under 10 years of age were subject to such complications. The blood changes were accompanied by clinical manifestations such as haematemesis, haemoptysis, bleeding from mouth and gums and petechial haemorrhage on the skin. Granulocytopenia and aplastic anaemia were also included among the cases reported. 28 out of the 31 cases reported were those of aplastic anaemia, and of the latter 24 ended fatally. These cases received abnormally high doses of chloramphenicol over a long time. But Hargrave and Heck (1952) described a case who had received only 12 capsules (3 g.) of chloramphenicol. The patient developed aplastic anaemia and died. There are however, sufficient examples in the literature demonstrating that this often fatal complication can occur as a result of even the first administration of chloramphenicol. For example, a 6 year old girl after receiving 2 doses of chloramphenicol, developed bleeding which could not be checked and the girl died of aplastic anaemia (Cone, 1952).

Often the first indication of toxic damage of the bone marrow and development of total aplastic anaemia, is the appearance of purpura. Decrease of thrombocytes often occurs simultaneously with a lower leucocyte and erythocyte count (Wilson *et al*, 1951). The effect of chloramphenicol on blood formation has been responsible for almost every known type of blood dyscrasia, e.g., thrombocytopenia, granulocytopenia, hypoplastic anaemia, haemolytic anaemia (Hodgkinsons *et al*, 1952).

In our study of 4 cases, Case 1 showed purpuric rash all over the body, Case 4 showed a few purpuric spots. All the 4 cases showed leucopenia and granulocytopenia. Case 2 showed hypoplastic anaemia.

4. *Liver damage*—Postmortem examination of cases described by Hodgkinsons *et al* (1952) brought to light the presence of fatty degeneration of the liver, confluent foci of liver cell necrosis and signs of multilobular cirrhotic changes. A case of death following chloramphenicol treatment in which severe liver damage was present has been reported by Salm (1953). The patient was a 5 year old boy who received 5 g. of chloramphenicol during a week as treatment for whooping cough.

None of our 4 cases showed any clinical evidence of liver damage.

5. *Psychic disturbances*—Psychic disturbances including delirium and hallucinations have been repeatedly noticed during the course of chloramphenicol treatment (Schindel, 1957). It is quite possible that such disturbances are due to purely toxic effect of antibiotics. It is equally possible that the suddenly liberated bacterial endotoxin resulting from widespread lysis of bacterial cells is the causative factor. The latter type of reaction, namely a toxic cerebral effect has been observed in the treatment of syphilis and leishmaniasis with arsenic and bismuth, and antimony respectively. The first observation of cerebral side-effects made in 1949-50 during the treatment of typhoid fever with large quantities of chloramphenicol attracted wide attention. Occasionally severe and often fatal vascular collapse occurred simultaneously with cerebral manifestation. Today a large quantity of chloramphenicol administered is held to be responsible for these effects. The toxic reaction resulting from the sudden liberation of large quantities of typhoid endotoxin has been described by Woodward *et al* (1954) in his presentation of typhoid fever therapy. This reaction is designated a 'shock-type reaction'. Stephens (1950) believes that the patient already weakened by the illness loses all resistance when lysis of the infective agent by the antibiotic suddenly sets free large quantities of toxin.

Case 3 showed marked psychic disturbances, which persisted for a long time though the temperature and the toxic effect of typhoid fever had responded earlier. This very fact shows that the psychic disturbances were due to chloramphenicol treatment. Case 4 also showed similar psychic disturbances.

6. *Neurotoxic disturbances*—Lasky *et al* (1953) have described the most serious disturbance of the nervous system which has to date been observed during the course of chloramphenicol treatment. This disturbance was a bilateral optic neuritis.

Harris (1950) described temporary visual defects which occurred together with cerebral symptoms such as stupor, confusion, increased irritability and pain in the back of head.

A survey of the literature unfortunately leaves one with the impression that many of the fatalities were due to unwarranted use of chloramphenicol.

Summary and Conclusion

4 cases of toxicity due to chloramphenicol administered for enteric fever are described.

Literature on chloramphenicol toxicity is reviewed.

Blood transfusion and steroids with other supportive treatment seem to hasten recovery in such cases, since all these cases were discharged with gratifying results.

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REFERENCES

CONE, R. E., JR. AND ABELSON, S. M.—*J. Pediatrics*, **41** : 340, 1952.

CRAMER, R. AND ROSSI, E.—*Helv. Pediatrica Acta*, **8** : 544, 1953.

GILL, P. F.—*M. J. Australia*, **1** : 768, 1950.

HARGRAVES, H. M. AND HECK, F. J.—*J.A.M.A.*, **149** : 1293, 1952.

HARRIS, H. J.—*Ibid*, **142** : 167, 1950.

HODGKINSONS, R., DAMESHEK, W. AND CAMPBELL, E. W. *Bull. N. Eng. M. Center.*, **14** : 81, 1952.

JANBAN, M. AND BERLRAND, L.—*Bul et Mem. Soc. Med. Hop de Paris*. **23** : 297, 1953.

LASKY, M. S., PINCUS, M. H. AND KATLAN, N. R.—*J.A.M.A.*, **151** : 1403, 1953.

MANHEIM, S. D. AND ALEXANDER, R. M.—*N. Y. State J. Med.*, **54** : 231, 1954.

SALM, R.—*Edinburgh M. J.*, **60** : 339, 1953.

RICH, M. L., RITTERHATT, R. J. AND HOTTMANN, R. J.—*Ann. Int. Med.*, **33** : 1459, 1955.

SHAH, M. J. AND VAKIL, B. J.—*Indian J. M. Sc.*, **10** : 623, 1955.

STEPHENS, P. R.—*Lancet*, **1** : 731, 1950.

SCHINDAL, LEO—Unexpected Reactions to Modern Therapeutic Antibiotics, 1957, William Heinemann, London, p. 64.

VOLINI, I. F.—*Proc. Central Soc. Clin. Research*, **22** : 74, 1950.

WILSON, L. E., HARRIS, M. S., HENSTELL, H. H., WITHERBEE, O. O. AND KAHN, J.—*J.A.M.A.*, **149** : 231, 1952.

WOODWARD, T. E., SMADEL, J. E. AND PARKER, R. T.—*Med. Clin. North Amer.*, **38** : 577, 1954.

FATAL REACTION FOLLOWING PAS

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The incidence of sensitivity reactions to penicillin has recently become alarmingly high. Though anaphylactic reactions may occur following injections of various proteins or sera, it is interesting to note that such fatal reactions may follow even after a dose of 10 g. sodium PAS. There is no question of impurities of the drug, as three other patients were taking the same salt of PAS in similar single doses in full stomach as in the case of the one which had a fatal termination. The case which ended fatally is reported.

CASE REPORT

A male, aged 48, a tea-garden sirder, was admitted in the garden hospital on 1-4-60 with complaints of (i) nocturnal fever, cough, pain in the chest, poor appetite and progressive weakness —all of 15 days' duration ; (ii) blood-stained sputum—duration 3 days. There was history of death of two members of his family from tuberculosis. He was suffering from chronic bronchial asthma for the last 6 years—but rarely getting a severe attack ; he was only a bit wheezy. About 15 days back he had another attack of asthma which was relieved by a dose of ephedrine by mouth. Since then he was having dry cough, pain in the chest, fever at night, poor appetite, and suffering from progressive weakness. A few days later he noticed that his sputum was blood-stained ; and so he came to the hospital for admission and necessary treatment.

On examination, the patient was found to be of average height, but reduced in weight. He was debilitated and emaciated. There was an asthmatic tendency, but not an actual attack.

Examination of the lungs—Right lung : Breath sounds diminished, crepitations on the upper zone, and scattered rhonchi. Left lung : Scattered rhonchi all over.

Investigations—1. Although the sputum was blood-stained, seven consecutive direct smear examinations were negative to acid-fast bacilli.

2. E.S.R.—45 mm. (1st hour)
3. Hb—70 per cent (Hellige)
4. X-ray chest : Increased feathering and enlarged hilar shadows were present on both sides. Left lung showed no active lesion. Right lung showed infiltrative lesion in the upper zone. There were opacities in the costophrenic angle.

Diagnosis—Pulmonary tuberculosis.

Treatment and PAS reactions—The patient was admitted on 1-4-60 and after necessary investigations he was put on anti-tuberculous treatment on 8-4-60. Streptomycin 1 g. daily, and also PAS 10 g. were advised. From 8-4-60 to 15-4-60 he was quite all right with the drugs and was showing signs of improvement clinically. But on 16-4-60 he had a rise of temperature in the afternoon, and felt a sensation of chill from the noon. The patient had received 10 g. of sodium PAS in a single dose in the morning after his breakfast. He had also been receiving streptomycin injection from the very beginning. As his temperature was fluctuating and no evidence of any acute infection could be detected anywhere, and as his blood smear was negative to malarial parasite, the patient though advised to continue streptomycin

and PAS was kept for 2 days without any specific medicine for his temperature. As the temperature was getting higher day by day, three quinine injections were given on 18th, 19th and 20th of April 1960. In spite of these injections the temperature remained a little high. It was presumed that the temperature might be due to PAS, and therefore the drug was withdrawn on 21-4-60. The temperature remained normal since then. It was therefore concluded that PAS reaction was the cause of the patient running a temperature. Only streptomycin was continued from 21-4-60 to 26-4-60. On 26-4-60 after some consultation it was decided to try another dose of PAS to see how it reacted. On 27-4-60 the patient was given 10 g. of PAS (sodium salt) after his breakfast. He reacted as follows:

After about 20 minutes of PAS administration the patient showed signs of allergic reactions—'pins and needles' sensation all over the body, urticarial rash, itching and nausea followed by intense vomiting. The patient was now getting high temperature with chill, asthma, giddiness, fainting attack and distress. The pulse was imperceptible in the wrist, the patient became cyanosed and breathing became stertorous and the blood-pressure dropped. Next the patient showed signs of tetany, followed by coma and death. The patient died in spite of all treatment.

Discussion

In this case the patient took PAS from 8-4-60 to 15-4-60, i.e., for 8 days without any reaction. From 16-4-60 he was getting reaction in the form of rise of temperature with chill only. This happened daily for 5 days until PAS was stopped on 21-4-60 and since then there was no rise of temperature up to 26-4-60, although streptomycin was continued all along. PAS was again tried on 27-4-60 after breakfast and a fatal reaction followed. Surely at the beginning the patient developed sensitivity with PAS, and died of anaphylactic shock when PAS was given for the second time on 27-4-60. The question of impurities of PAS does not arise here as three other patients were taking the same salt of PAS in a similar single dose (viz., 10 g. of the sodium salt, after food) and two of them with normal garden work. Reaction with PAS is not uncommon but such a fatal reaction is very rare. Death from PAS due to liver damage has been reported.

Summary

A case of pulmonary tuberculosis was initially treated with streptomycin and PAS. After a few days the patient was getting mild reactions with PAS (temperature with chill only). Administration of PAS was stopped and the temperature became normal. PAS tried for the second time to see how it reacted resulted in a fatal reaction.

Acknowledgment

My thanks are due to Dr. T. Norman, Principal Medical Officer, Amgoorie Tea Estate Ltd., Assam, for encouraging me to report this case.

Sensitivity to PAS is well known. It is unfortunate that the author gave 10 g. of PAS in a single dose (which is not the usual procedure of giving PAS) even after he had suspected sensitivity to the drug. This resulted in the fatal reaction. There are much simpler and safer methods of testing sensitivity to drugs which should have been tried. When sensitivity to any drug is suspected or found, it is usual to desensitise the patient with graduated doses to avoid such a catastrophe.—Ed., *J. Indian M. A.*

SPONTANEOUS SUPPURATIVE MYOSITIS

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Spontaneous suppurative myositis is a rare condition, occasionally found in the tropics. It is characterised by localised abscess formation in the muscles. The exact cause of the disease is not known. The infection was regarded as a secondary streptococcal and staphylococcal infection in filaria-infested subjects. It was also thought to be caused by haemolytic streptococcus derived from the throat. In 1958 Barrett and Gresham (1958) published four fatal cases in which streptococci were the causative organisms. The infecting organism may be a haemolytic staphylococcus, usually *Staph. aureus* or less commonly *Staph. albus*.

The site of entry is uncertain but dissemination appears to take place through the blood stream, and the lymphatics and lymph glands may show no sign of inflammation. Associated conditions like ankylostomiasis, malaria, filaria, syphilis, etc. may be present.

Two types of acute myositis have been described:

1. In the acute non-suppurative type a painful indurated, ill-defined, tender mass can be felt in the affected muscles. The neighbouring tissue may be inflamed and oedematous. This type usually runs a febrile course. On incision the tissues are oedematous. The regional lymph glands may be enlarged and tender.

2. In the acute suppurative type, clinical features are those of a deep-seated abscess, and, on incision large collections of pus in the affected muscle are found. The abscess cavity is localised. In severe cases generalised septicaemia may result. Chronic abscesses have been recorded in the adductor magnus. The usual sites of involvement are thigh muscles, pectoralis major, serratus magnus, latissimus dorsi, gastrocnemius, flexors of the arm, ilio-psoas and internal oblique abdominis.

The condition may take an adverse course and the temperature alone should not be a guide to the seriousness of the condition. This disease may be confused

with acute thrombophlebitis, acute osteomyelitis, acute lymphadenitis, cellulitis, haematomas, Watcher-Bechetrew bodies, etc., but with some care the diagnosis should not be difficult. Chronic cases have been mistaken for neoplasms and *vice versa*. Aspiration in the suppurative form will establish the diagnosis.

In the present antibiotic era the correct treatment depends on the isolation and identification of the causal organisms and the use of appropriate antibiotics.

Case Report

A male patient, aged 35, working as an electric mechanic, was admitted to the Tata Main Hospital, Jamshedpur on 2-8-60 with complaints of fever of seven days' duration and pain over the thighs for six days. He stated that on 27-7-60 he developed fever with backache and headache. He had no rigor and sweating. On 28-7-60 he had pain in both thighs, more on the left than on the right. He felt a distinct swelling over the upper half of the left thigh, and at about the same time he noticed that the inguinal lymph nodes were enlarged and painful. He was being treated outside and as the treatment did not give him any relief he was admitted to this hospital.

His personal, past and family history did not reveal anything unusual.

On admission, his general state of nutrition was found to be good. He looked ill but not toxic. The temperature was 102·6°F, respiration 20 per minute, pulse 100 per minute, regular. The eyes were slightly injected and teeth and gums did not show any infective condition. The tongue was moist but coated. The throat was not congested. The inguinal lymph nodes were not felt. There was a tender swelling $2\frac{1}{2}'' \times 1''$ in the upper part of the right thigh anteriorly in the sartorius about 2" below the inguinal ligament. The skin over the swelling looked normal but felt warm. The swelling was tender, cystic and freely mobile from side to side along with the muscle, but not upward and downward. No pitting oedema or venous engorgement was found. The lower part of the left quadriceps femoris anteriorly just above the patella looked reddish and slightly swollen. It was warm to touch, tender, indurated and slightly oedematous. The swelling measured $3'' \times 1\frac{1}{2}''$. The movement at the left knee joint was painful but not limited and there was no free fluid in the joint. The heart did not show any evidence of endocarditis. The patient was incidentally found to have uncomplicated essential hypertension with a blood pressure of 190/110 mm. Hg. The spleen was not palpable.

Blood examination showed a total W.B.C. count of 12,400/cmm. with neutrophils 85 per cent, lymphocytes 13 per cent, monocyte 1 per cent and eosinophil 1 per cent. Urine showed a trace of albumin which later on cleared up. Blood was examined for malarial parasite, microfilaria, W. R. and Kahn tests with negative results. Blood urea was 27·5 mg. per cent. Blood culture showed *Ps. aeroginosa* which was considered to be a contaminant. Urine culture was sterile. Prostatic smear was essentially normal. X-ray of the left femur showed no bony lesion.

Ten ml. of purulent fluid was aspirated from the right thigh which on culture showed *Staph. aureus* and *Proteus vulgaris*, sensitive to penicillin, aureomycin, terramycin and chloromycetin only. About 0·5 ml. of fluid was aspirated from the left thigh. It was clear and on culture showed *Staph. aureus, Proteus vulgaris* and *Ps. aeroginosa* sensitive to the same antibiotics.

Routine check-up of the teeth, gums, ears, nose and throat showed no septic foci.

The chief pathogen implicated was thought to be *Staph. aureus* which was fortunately highly sensitive to penicillin. The patient was given 0·4 mega units of crystalline penicillin per day in divided doses. The temperature settled down to normal in three days. Swelling, pain and tenderness disappeared in about three weeks.

At the time of his discharge on 19-8-60 he was afebrile and had no pain or tenderness. Slight induration still remained which cleared up completely by 2-9-60. He was advised to continue his treatment for hypertension.

Summary

Spontaneous suppurative myositis is a rare condition. The exact cause is not known. Staphylococci and streptococci have been implicated.

A case of the acute suppurative type is reported. *Staphylococcus aureus* was isolated from the two lesions and the strain proved to be penicillin-sensitive. He responded to the treatment and was discharged cured.

Acknowledgment

I am grateful to Lt. Col. A. F. Lasrado, Superintendent, Tata Main Hospital, Jamshedpur, for his kind permission to report this case and to Lt. Col. S. Kaul, Physician-in-charge, for helping me in the preparation of the notes and also to my colleagues who assisted me in the management of the patient. I am also thankful to Dr. E. N. Murty, R.M.O., Tata Main Hospital for help in various ways.

Reference

Barrett, A. M. and Gresham, G. A.—*Lancet*, **1** : 347, 1958.

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THE DRAFT MENTAL HEALTH BILL

The law in relation to mental illness has undergone changes from time to time in the light of better understanding of the problem of the causation and course of mental disorders. This pace has quickened with the dramatic results achieved in a considerable proportion of these disorders with the introduction of physical means of treatment like electro-convulsion, insulin shock, lobotomy, and, more recently, psychopharmacological drugs. It is getting to be realised that mental illnesses are in no way different from physical illnesses.

The original Lunacy Act of England and Wales of 1890 underwent a significant change with the introduction of the Mental Treatment Act of 1930. The Report of the Royal Commission on Mental Disorders and Mental Deficiency (1954-57) and the Mental Health Act of England and Wales (1959) reflect the largest trends in the intramural and extramural care and management of mentally ill persons. The most significant features of the English Act are informal admission of voluntary patients and the simplification of the procedure for admission of involuntary cases. There is also the reclassification of mental disorders into the mentally ill, severely subnormal and the psychopathic.

In this country, until recently, the Indian Lunacy Act (1912) was made applicable to the provinces only. There were several State enactments regulating the admission and management of mentally unsound persons in the princely States. After the integration of States, the operation of these State Enactments is to be considered as having ceased.

For some years there has been an attempt among specialists and in informed circles to revise the I.L.A. in the light of the trends indicated in the Royal Commission's Report of 1954-57. The Ministry of Health elicited the opinion of the Indian Psychiatric Society some years back. Some months ago the draft Mental Health Bill was circulated to all the States for their comments. Further, the first conference of Superintendents of Mental Hospitals in India held in November 1960 discussed clause by clause the Draft Bill and extensive changes were recommended. The idea of having a Central Psychiatric Board was dropped. The categorisation of patients into mentally ill, mentally defective, inebriates, etc., and the establishment of separate institutions for their care and management were considered unnecessary in the existing conditions. Informal admission of voluntary patients and simplification in the admission and discharge of involuntary cases are the main features of the Bill. Patients can be sent out on parole for longer periods. Certain other clauses in the I.L.A., e.g., medical certification, inquisition proceedings, etc., are to be retained without appreciable modification. The Conference recommended the admission of criminal patients into separate institutions. Although administratively this may be a necessity, from the psychiatric point of view this may not be sound. The criminal act of the patient in most cases is not the product of any inherent criminal tendency but is due to the eruption of an acute psychiatric episode which has resulted in a severely anti-social act coming within the purview of the law.

The admission of observation cases into jails in places far removed from the State mental hospital has resulted in untold misery to the patients and has produced a sense of deep shame on the part of the relations of these patients. Certification of cases should be related to the actual accommodation available in transit camps and in the mental hospitals. The establishment of psychiatric observation units in general hospitals and the licensing of private mental nursing homes should ease the pressure on some of the State mental hospitals. With the increase in the number of psychiatrists available in the country as a result of the establishment of the All-India Institute of Mental Health, the dearth for psychiatrists may be eased in the coming years. Humane treatment and management should be ensured whatever the system—Western or indigenous—that is employed. The employment of ancillary services, specially psychiatric social workers, will establish direct contact between the community and the mental health services. This should help to break the bias presently held by the community against mental hospitals.

Any Act which is complicated and unworkable is a bad Act and should not find a place in the Statute Book. The provisions of the Act should be related to the actual needs of society and must embody the latest trends, orientations and attitudes of the enlightened sector of the population. It should neither be too radical nor too conservative and the procedures envisaged in the enactment should receive the spontaneous approval of the common man.

The Draft Bill is likely to be further cross-fertilised with ideas received from the several States, the ministries concerned, parliamentarians and so on. There is however reason to expect that any Act which tries to change the established order will be subject to severe criticism. Some time ago doubts were raised in some quarters regarding 'the wisdom of relaxing the conditions now laid down for involuntary admissions to asylums, the argument being that it should not be made easy for designing relations or others to have inconvenient persons locked up'. This emphasis on proper safeguard is relevant and will certainly be incorporated in the Bill. Fear was expressed that horror treatments like E.C.T. and insulin shock and lobotomy would be administered to innocent persons. The general concensus of opinion, however, has been for effecting a change in the present Indian Lunacy Act and for bringing about a shift in orientation—for considering the mental hospitals as treatment centres and not merely as bad custodial institutions.

It is not surprising that any society should still consider the need for a distinction between physical and mental illness. The observation of alterations in thinking, feeling and behaviour which are sometimes bizarre has resulted in the deep-rooted conviction that mental disorders are far removed developmentally from physical illnesses. The persistent belief of bygone days cannot be expected to undergo radical changes in a short span of time. Dissemination of scientific knowledge and a persistent attempt at enlightenment of the public is likely to yield more benefit than any enactment however well intentioned it may be.

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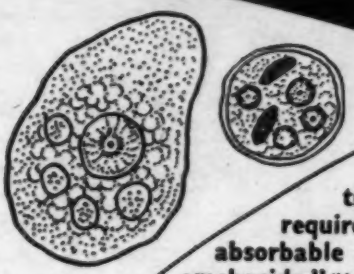

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CURRENT MEDICAL LITERATURE

Role of the Liver in the Development of Haemorrhagic Shock

SHOEMAKER, W. C., WALKER, W. F. AND TUCK III, L. N. (*Surg. Gynec. & Obst.*, **112** : 327, 1961) from the Department of Surgery, Peter Bent Brigham Hospital, Harvard Medical School, Boston, Massachusetts, and the Department of Experimental Surgery, Michael Reese Hospital and Medical Centre, Chicago, write :

Hepatic metabolism and haemodynamics have been studied in a series of unanaesthetised animals whose major hepatic vessels had been previously catheterised.

Two types of haemorrhage were studied. Blood was suddenly or "acutely" withdrawn in sufficient amounts to lower blood pressure to 60 to 40 mm/Hg. Findings were compared with the hepatic response that followed a slow, prolonged haemorrhage.

After haemorrhage, there was a progressively increasing hepatic glucose output, hepatic potassium output, and hepatic sodium uptake and an increased hepatic venous resistance. The latter was further intensified after retransfusion of shed blood.

The hepatic metabolic and haemodynamic events that follow administration of epinephrine to unanaesthetised dogs under comparable conditions had previously been found to increase hepatic glucose output, hepatic potassium output, hepatic-sodium uptake, and hepatic venous resistance. This together with another previous observation that the adrenal gland output of catechol amines was markedly increased with haemorrhage suggest that many of the hepatic, metabolic, and haemodynamic effects that follow haemorrhage are mediated by epinephrine.

Leg Ulcers in Rheumatoid Arthritis

BENINSON, J. AND ENSIGN, D. C. (*J.A.M.A.*, **175** : 113, 1961) from Associate Physician, Department of Dermatology, and Physician-in-charge, Arthritis Division, Henry Ford Hospital, write :

Ulceration occurred in the legs of 9 patients as a complication of rheumatoid arthritis. Treatment consisted essentially in the initial application of absorbable gelatin powder, with an overlay of a "pressure-sandwich of gauze dressings, and the subsequent use of a "pressure-gradient technique employing an elastic stocking, custom-made according to certain specified measurements. These measures, with a high-protein diet, attention to shoes, and moderate walking exercise, controlled the oedema and led to healing in every case.

Surgical Treatment of Rheumatoid Hand

HENDERSON, E. D. AND LIPSCOMBE, P. R. (*J.A.M.A.*, **175** : 107, 1961) from the Mayo Clinic and Mayo Foundation (a part of the Graduate School of the University of Minnesota), write :

Surgical treatment of hands affected by rheumatoid arthritis may be beneficial in restoring function and eliminating pain in well-motivated patients in whom disability of the hand is increasing in severity or is severely limiting function. The surgical treatment may be directed to tendons, tendon sheaths, bones, or joints. The procedures described have been used successfully in a large and growing number of patients with rheumatoid involvement of the hand. We believe that these surgical procedures and the indications for their use will be well established in the near future.

Pituitary Failure After Head Injury

GOLDMAN, K. P. AND JACOBS, A. (*Brit. M. J.*, **2** : 1924, 1960) from Paddington General Hospital, London, write :

An account is given of the case of a girl of 15 in whom diabetes insipidus occurred after a head injury. She later developed anterior pituitary failure and died six years after the accident in pituitary coma. Post-mortem examination revealed widespread sclerosis throughout the neurohypophysis and the hypothalamus, but the anterior lobe of the pituitary appeared normal. Traumatic pituitary failure is discussed and an attempt is made to interpret the features of this case.

Postirradiation Fractures of the Femoral Neck

BICKEL(W. H., CHILDS, D. S. AND PORRETTA, C. M. (*J.A.M.A.*, **175** : 126, 1961) from the Mayo Clinic and Mayo Foundation (a part of the Graduate School of the University of Minnesota) in dealing with postirradiation fracture of the femoral neck with emphasis on the results of treatment observe :

The conclusions of a study of 19 patients with 24 postirradiation fractures of the neck of the femur and of the pathological process involved were as follows : 1. With early diagnosis and reasonable care, these fractures will unite in the great majority of instances. We believe that when the fracture is in good position and stable, simple non-weight bearing is sufficient. When the position can be improved, even in late cases, internal fixation after traction is justified. When the fracture is old and greatly displaced, more extensive reconstructive operations must be considered. 2. Avascular necrosis of the head of the femur is an uncommon complication. 3. In one-fourth to one-third of reported cases in which postirradiation fractures of the femoral neck develop, the fractures are bilateral.

Elective Gastric Resection for Duodenal Ulcer

HARVEY, H. D. (*Surg. Gynec. & Obst.*, **112** : 203, 1961) from the Department of Surgery, College of Physicians and Surgeons, Columbia University, and the Surgical Service of the Presbyterian Hospital, New York, writes :

Twenty-four years' experience with elective gastric resections for duodenal ulcer is analysed.

In our hands, a resection of about 40 to 50 per cent of the stomach plus a subdiaphragmatic vagectomy has given the best results.

A postoperative death rate of 1 per cent for such operations can be maintained.

The type of anastomosis that is performed is relatively unimportant provided that it can be safely employed for the ulcer at hand.

Multiple Primary Malignancies

WERTHAMER, S., JABUSH, M. AND SCHULMAN, J. (*J.A.M.A.*, **175**: 558, 1961) from the Paul Kimball Hospital, Lakewood, N. J. write:

Another quadruple case of primary malignancies has been added to those in the literature. Satisfactory criteria for the acceptance of multiple primary malignancies can be formulated.

The importance of this case, although rare, is stressed for the diagnostic implications of a 2nd, 3rd, or even 4th unrelated malignancy occurring in those patients who have been treated for previous malignancy.

Appraisal of Renal Function and Infection in Bladder Cancer

LEVIN, J., SNEIDER, S. E. AND ANDREWS, J. R. (*Surg. Gynec. & Obst.*, **112**: 53, 1961) from the Radiation Branch, National Cancer Institute, National Institutes of Health, Public Health Service, Department of Health, Education and Welfare, Bethesda, write:

Eleven patients with advanced bladder cancer who have had ileal bladder construction and x-irradiation therapy have been studied before and after operation with respect to renal function and infection. Renal function as measured by 15 minute and 30 minute phenolsulphonphthalein excretion and creatinine clearance was found to be sharply depressed before and after formation of an ileal bladder even though the blood urea nitrogen, serum creatinine, and intravenous pyelograms markedly improved in the postoperative period. There was no change in the quantitative urine cultures during this same time. There was no instance of urinary tract obstruction or involvement of kidney by tumour in our patients at postmortem examination. Our data indicate renal function is more compromised in these patients than had been appreciated previously. Urinary stream diversion was not noted to cause any significant improvement in renal function as measured by the endogenous creatinine clearance and fractional phenolsulphonphthalein excretion, or to effect a change in urine bacteriology. However, this procedure was quite effective in providing prompt relief of the distressing symptoms of bladder cancer and it did facilitate the radiation therapy of the extensive bladder tumour and the control of acute infection of the upper tract.

Epidural Anaesthesia *versus* Bed Rest in Sciatica

COOMES, E. N. (*Brit. M.J.*, **1**: 20, 1961) from St. Thomas's Hospital, London, in giving a comparison between epidural anaesthesia and bed rest in sciatica writes:

A comprehensive system of examination for cases suffering from sciatica has been put forward, and criteria for selection of patients for this investigation have been formulated. All the patients included had nerve-root pressure with neurological signs in the affected leg; none of them had bladder paresis.

Forty patients were studied, alternate ones being put into a bed-rest group and an epidural group. There was no significant difference in age, sex, duration of symptoms, or nerve-root-level involvements in the two groups.

The criteria for "cure" were loss of pain and normality of straight-leg raising with or without neurological improvement. The mean time taken for the bed-rest group to recover was 31 days, and for the epidural group 11 days.

Five patients in the bed-rest group and 12 in the epidural group showed improvement in the neurological signs.

The mechanism for this is discussed and the final aspect of prolonged bed rest is emphasised.

Other series of patients suffering from sciatica, treated with epidural anaesthesia, are briefly reviewed.

CURRENT TOPIC

UNION HEALTH MINISTRY'S ACTIVITIES DURING 1960-61

The entire country is expected to have one primary health centre in each Community Development Block by the end of the Third Five Year Plan period, according to the summary of activities of the Union Ministry of Health for 1960-61. Up to March 31, 1960, 2,282 primary health centres were established and during 1960-61 and 1961-62, 635 and 467 respectively were expected to be opened by the various States and Union Territories.

The National Malaria Eradication Programme made considerable progress during the year and 390 units established according to the Plan target continued to function. Surveillance operations have already started in 339·5 units and will be undertaken shortly in 25 more. These operations generally envisage domicilliary visits by workers. The data collected will help in determining withdrawal of spraying operations.

Porty-seven Filariasis Control Units were allotted under the National Filariasis Control Programme during the year. The survey work is in progress in Andhra Pradesh, Kerala, Madhya Pradesh and Uttar Pradesh. About 2·89 lakh persons were administered diethylcarbamazine tablets. Nearly 84,000 houses were sprayed once; 60,000 twice and 32,000 thrice with residual insecticides up to October 31, 1960.

During the year, pilot projects as part of preparatory measures for the implementation of the National Smallpox Eradication Programme in the Third Plan period were started in one district in each State and in the Union Territory of Delhi. These pilot projects estimated to cost Rs. 33·00 lakhs are expected to be completed by the end of March this year. The Smallpox Eradication programme which will be launched later this year is proposed to be completed in 3 years.

Up to November 1960, 71 VD clinics had been established in various States. The results of the mass VD campaign in the Kulu Valley in Punjab showed a declining tendency in the prevalence of venereal diseases. Yaws operations were continued in the three States of Andhra Pradesh, Madhya Pradesh and Orissa. Maharashtra has also joined the campaign.

At present 170 BCG Teams are working in the country and up to the end of October 1960 the number of persons tuberculin tested was 15,51,99,738 of whom 5,44,90,871 were vaccinated with BCG vaccine. The stage has been set for the manufacture of freeze-dried vaccine at the BCG Vaccine Laboratory, Guindy. The production of dried vaccine on a pilot basis has been started there and large-scale production is expected to begin by the middle of 1961.

Under the scheme for the control of leprosy there are at present 4 treatment and study centres and 109 subsidiary centres in various States. A scheme for the training of 60 medical officers every year in leprosy in the Medical College in Nagpur and another scheme in collaboration with the Gandhi Memorial Leprosy Foundation have been sanctioned.

Pilot projects for Trachoma are expected to be established in U.P., Rajasthan, Madhya Pradesh, Bihar and Punjab. So far preliminary epidemiological surveys, miniature mass campaigns, and treatment of primary school children have been undertaken in some areas of U.P. and Punjab.

During 1960-61 financial assistance was offered to 25 medical colleges including one private college. The Second Plan provision of Rs. 6·5 crores for the establishment of new medical colleges and the expansion of existing ones is likely to be exceeded by Rs. 4 crores.

In 1960, 50 students including 5 foreign students were admitted to the All-India Institute of Medical Sciences, New Delhi. In the post-graduate training course 103 students have so far been admitted in various subjects.

The number of admissions in the Maulana Azad Medical College, New Delhi, was raised to 72 during the academic year 1960-61, and the seats reserved for girl students to 17. During 1960-61 20 students were admitted to the post-graduate courses in the C. E. M. Dental College and Hospital, Bombay, and Nair Hospital Dental College, Bombay.

Training facilities for health visitors in the existing 9 health centres were expanded and nine new centres opened in Allahabad, Bareilly, Ranchi, Rajkot, Trivandrum, Indore, Srinagar, Bangalore and Cuttack. The school at Ranchi has since been amalgamated with the school at Patna. Up to December 1960, 1,084 and 703 completed their training as Health Visitors and Integrated Midwifery-*cum*-Health Visitors respectively.

A short six-month course has been drawn up to orient the indigenous dais in modern techniques of asepsis and to make better use of their services in rural areas. Up to the end of September 1960, 8,377 dais were trained.

It has been decided to continue the three Reorientation Training Centres for the Public Health Staff assigned to Community Projects at Poonamallee (Madras), Najafgarh (Delhi) and Singur (West Bengal) during the Third Plan. Up to the end of 1960, 2,475 health personnel of various categories were trained at these centres.

Apart from the five T.B. Demonstration and Training Centres at New Delhi, Patna, Trivandrum, Hyderabad and Nagpur, the centre at Bangalore has started functioning at an adjunct of the National T.B. Institute, Bangalore. Two more centres at Agra and Calcutta are being set up.

During 1960-61, the total number of candidates trained so far in Public Health Engineering under various categories is 618. A tentative provision of Rs. 15 lakhs has been made during the Third Plan for this purpose. The number of persons proposed to be trained during 1961-62 is 240.

During 1960, 84 scholars/fellows were trained in various medical and allied subjects in India. These candidates were sponsored under the Colombo Plan, Point Four Programme, World Health Organisation Scheme and United Nations Technical Assistance Administration Programme. 150 Indian nationals were sent abroad for training in various specialities.

The Indian Council of Medical Research has initiated a comprehensive programme of research in communicable diseases, cardiovascular diseases, diseases of nutritional origin, maternal and child health, dental health, mental health and industrial health. Basic and fundamental research is being done on many problems in physiology, pathology, bacteriology and clinical medicine.

The working of the C.H.S. Scheme during the year under report has attained a fair degree of stabilisation after a steady process of expansion and re-organisation. The attendance at the dispensaries during the year was 47,38,921 as compared to the previous year's figure of 40,14,527. The estimated expenditure during the year was Rs. 69,81,000, of which a sum of Rs. 32,88,700 is anticipated to be recovered on account of C.H.S. contribution. Four new dispensaries were opened during the year. Two more dispensaries are expected to be opened shortly taking the total to 40—the target set under the expansion and re-organisation programme. Twenty semi-Government and autonomous bodies were admitted into the C.H.S. Scheme during the year. In pursuance of the decision to house C.H.S. dispensaries in buildings of their own, sites have been acquired for four.

Health Check-up Clinic and Mass X-ray of Government servants are helping Government servants to detect, well in time, symptoms of latent diseases.

The facilities available in C.H.S. Family Planning Clinics have been extended to the non-C.H.S. beneficiaries also. The attendance at the Clinics and sale of contraceptives has registered a considerable increase.

The after-care and rehabilitation centre for T.B. patients has been fully established at Tambaram. The construction of the New Delhi Centre has been completed and the equipment is under procurement.

During 1960-61, the Government of India approved the establishment of 150 T.B. Isolation beds. The total number of T.B. Isolation beds approved for establishment during the Second Five Year Plan is 4,720. The number of beds actually established during 1956-57 to 1959-60 is 784, and of those proposed to be established during 1960-61 is 2,228. These figures do not include those for Andhra Pradesh.

The establishment of 430 open air centres in the States of Andhra Pradesh, Jammu and Kashmir, Punjab and Mysore has been approved during 1960-61.

The Government of India approved the establishment

of Health Education Bureau with Central assistance during the Second Plan period in thirteen States.

The National T.B. Institute, Bangalore, started with UNICEF/WHO assistance, was inaugurated by the Prime Minister on September 16, 1960. Training course for BCG workers was started from October 3, 1960. The construction of a 30-bedded block for leprosy patients suffering from tuberculosis is nearing completion.

During 1960, the Institute successfully produced an experimental model of Electro-convulsive Therapy Machine and in co-operation with the Indian Telephone Industries has now produced a model which has passed the tests and is ready for marketing.

By December, 1960, the number of Family Planning Clinics was 1,492 (963 rural), other medical and Health Centres giving family planning advice 1,589 and districts having family planning service 292. About 13 medical colleges and 60 other training centres had family planning clinics. Thus family planning services are available from 3,081 centres. The reported number of sterilisation cases (under-estimates) increased from 7,823 (1956) to 35,722 (1959). The total reported number from 1956-60 (November is 1,08,047. Abont 82·42 lakh people have been contacted and 18·40 lakhs given contraceptive advice. The off-take of contraceptive has considerably increased since 1956.

For the development of indigenous systems of medicine in the year under review, an amount of Rs. 6·78 lakhs has so far been granted to various private institutions.

The Central Council of Ayurvedic Research has drawn up a curriculum and syllabus of studies for Ayurveda to ensure uniformity of standards throughout the country. The Government of India have also set up Advisory Committees for Homoeopathic and Unani Systems of Medicine. A provision of Rs. 8 crores is proposed to be made in the Third Five Year Plan for the development of Indigenous Systems of Medicine. During 1960-61 researches in Grahani Roga, Udaya Roga, Krimiroga, Amavata, Tamaka Swasa, Kalanijapadai, were undertaken. 23 students qualified from the Post-Graduate Training Centre in Ayurvedic Medicine, Jamnagar.

During the year an institution for training of Pharmacists was started in Orissa and another in Madras. So far five State Governments, four Universities and one private body conduct courses of study for the Diploma in Pharmacy.

The scheme for a Model Hospital Pharmacy prepared by the Pharmacy Council has been included in the Third Five Year Plan by the Delhi Administration and the Government of Punjab.

The Central Government has included in the draft Third Five Year Plan a scheme for a Central Institute of Pharmacy, where facilities will be provided for conducting courses of study for the Degree and Post-Graduate Degree in Pharmacy.

The draft Master Plan for Delhi was published by the Delhi Development Authority on July 8, 1960 for inviting objections and suggestions from the public. The Authority also embarked on a number of schemes for developing land for housing and industrial purposes. It is proposed that about 4,000 acres of land should be acquired and developed during the Third Plan period.

To augment water supply in Delhi, efforts are being made to persuade the Governments of Punjab and U.P. to undertake the Beas-Sutlej Link Project and Ram Ganga schemes respectively. It is hoped that from these two courses a supply of 525 cusecs of water would become available. With regard to sewage disposal, financial assistance in the shape of loans and grants was provided to the Delhi Municipal Corporation for the implementation of the recommendations made by the Reddy Committee.

The New Delhi Municipal Committee took up the execution of the recommendations made by the Reddy Committee for anti-flood measures. Phase I programme has almost been completed. The Committee has also widened certain roads and constructed a new road from Dhaulana Khuan to Shanti Path.

Uunder the National Water Supply and Sanitation Programme the total number of schemes included so far is 364. The estimated cost of all the approved schemes is about Rs. 80 crores. A provision of Rs. 63 crores was made in the Second Plan for carrying out these schemes, which was later reduced to Rs. 57 crores. During the year 1956 to 1961 loans totalling Rs. 45·93 crores (including the provision made for the year 1960-61) would have been sanctioned to the State Governments for the execution of new and spill-over schemes.

299 water supply and sanitation schemes covering some 16,000 villages and estimated to cost Rs. 18·63 crores have been approved under the programme during the I and II Plan periods up to December, 1960. A sum of Rs. 25 crores was provided in the States' Plans for the rural water suppy schemes during the Second Five Year Plan. During that period a sum of Rs. 8·4647 crores (including the provision made for the year 1960-61) would have been sanctioned as grants-in-aid to the participating states.

The Government of India contributed Rs. 18,20,047 to the World Health Organisation and Rs. 1,00,000 to Malaria Eradication Special account during 1960-61. The W.H.O. provided 94 experts for 40 health projects during 1960, at an estimated expenditure amounting to $454,443 from the Regular Budget and $481,660 from Technical Assistance Fund. Besides this, a provision of $228,360 was also made under the Malaria Eradication Special Account.

During the year 1960, the Government of India contributed Rs. 30,00,000 to the UNICEF, and the allocation made by the Fund to India at the March 1960 session amounted to $1,576,200.

NOTES AND NEWS

Discoverer of BCG Vaccine Dead

Professor Jean Marie Guerin, the discoverer of the anti-tuberculosis vaccine BCG died at Paris on 9-6-61. He was 89.

Professor Guerin, Honorary Head of the Pasteur Institute, was one of the world's authorities on TB.

Prof. C. G. Jung Dead

Prof. Carl Gustav Jung, leader of the school of Analytical Psychology, died on 6-6-61. Prof. Jung was 85.

Prof. Jung was the last survivor of three pioneer explorers into the 'Unconscious',—the other two being the late Alfred Adler and Sigmund Freud. Like Adler, Prof. Jung was once a follower of Freud's theory of Psycho-Analysis, but he broke away and developed a theory that there were driving forces behind human actions, such as religion, which were as important as sexual instincts.

Prof. Jung was born in Keswil, Switzerland on July 26, 1875, son of an Evangelical Minister, and graduated in medicine from Basle University. In 1913, the year of his break with Freud, he took part in the International Medical Congress in London. He then lectured at Bedford College and later in Aberdeen. In 1938, he became the first Psychologist ever to receive the honorary degree of Doctor of Science from Oxford.

New Cure for Cancer Claimed

Surgeon-General Luther Terry said in a Radio interview on 1-6-61 in Washington that the Government was confident it had found the first drug ever to cure cancer.

Terry referred to the chemical methotrexate which in tests cured or arrested nearly 50 per cent of the cases of choriocarcinoma. It spreads rapidly to the rest of the body and without the drug is almost always fatal.

Methotrexate has also prolonged the lives of some victims of leukaemia, cancer of the blood, which is always fatal. The drug has been used wtih very limited success against cancer of the testicles.

Test Tube Baby

The successful fertilisation of a ripe ovum in a test tube has been announced at Tokyo by an authority on artificial insemination. The expert, Dr. Motoyuki Hayashi, Professor of Obstetrics at Toho University in Tokyo claims that the artificially impregnated ovum when transplanted into the womb of a sterile woman would enable her to bear a child.

Dr. Hayashi and three fellow researchers extracted ova from four hospitalised women patients and placed them in separate test tubes each containing a mixture of salt dextrose, special proteins and serum to encourage ovulation. In three cases the ova died in five days. In the remaining test tubes still containing live ova, he placed male sperms two days later. Within 24 hours, he found that the fertilised ovum had divided into eight cells indicating the phenomenon of pregnancy. He said during the following week the eight cells would continue doubling until a normal embryo was formed. This embryo if transplanted into the womb of even a sterile woman would grow into a foetus, he claimed.

Dr. Hayashi and his assistants have been carrying on studies on artificial fertilisation of ripe ova in test tubes for four years using rabbits, mice and other animals. He said that all the experiments were fully successful although experiments with human ova failed many times. Dr. Hayashi is confident that in two or three years his experiments would reach a stage where they could be successfully applied to sterile women.

Dr. Hayashi's success has been described as "epoch making" by Dr. Kakuichi Ando, one of Japan's foremost authorities on artificial insemination.

The "Faces" You Walk on

A 37-year-old Japanese has earned a doctor's degree for a study of human soles. Oyichiro Hirasawa of Shizuoka University has put in 15 years' study on the subject.

"You can judge a person's personality and health by looking at his sole," he says. A person in top condition has his body weight equally distributed over his sole, while in a troubled person the distribution is unequal, he theorises. He contends that soles are like faces. They come in various shapes and sizes, and seldom are any two alike.

New Baby Food

After eight years of research, the Institute of Central America and Panama has come out with a formula, inacaparina, to fight undernourishment and infant mortality in the world's under-developed countries.

Inacaparina is a mixture of cotton-seed flour, and sorghum with vitamin and protein values equivalent to milk. Three glasses of it a day containing 75 grams cost 3 cents while the same amount of milk would cost 15 cents. This recipe would control protein deficiencies in the young and old and may drastically reduce deaths from protein deficiency.

The Nutrition Society, London

A symposium will be held at the National Institute for Research in Dairying, Shinfield, Reading, on Friday, 13th October, 1961 on Agricultural Problems in underdeveloped countries. Professor R. G. Baskett, (Director, The National Institute for Research in Dairying) will preside, Professor L. Dudley Stamp (London School of Economics) will speak on Limitations of climate and soil; Dr. Audrey I. Richards (Newnham College, Cambridge) on Human problems concerned in increasing agricultural production; Dr. J. C. Shaw (FAO, Rome) on Problems of increasing animal production ; Mr. T. J. Lansbury (University College of Ghana) on Livestock production with particular reference to the nutritional problems of West Africa; Dr. C. F. Hickling (Colonial Office, London) on Fish production in underdeveloped countries; Professor A. H. Bunting (University of Reading) on Problems of increasing arable production.

Mobile Medical Relief Units

Two mobile medical units gifted by the CARE were presented to the Chief Minister, Mr. Y. B. Chavan, by the U. S. Consul-General in Bombay, Dr. Robert M.

Carr, at the Sachivalaya on 22-5-61. The units will help check eye diseases and organise maternity work.

A mobile eye clinic, the gift of CARE's donors in America, will be utilised by a free touring eye hospital. Another mobile medical van will go to Shri Mouni Vidyapeeth of Gargoti village in Kolhapur district, for prenatal and postnatal care.

Presenting the units, Mr. Carr said the gift was unique as it was the direct gesture of the American people. Many Americans, including school children, professors and journalists, had contributed donations to the CARE for the purpose.

Accepting the units, Mr. Chavan said the gift was a fine gesture of friendship between the two peoples.

Mental Health Advisory Committee

The Estimates Committee in their Forty-fifth Report —Ministry of Health—Medical Services (Part II) recommended that a Central Council of Mental Health should be established with its constitution and functions analogous to similar Councils under the Ministry of Education.

The Central Council of Health in their eighth meeting held in Jaipur on the 28th and 30th October, 1960 considered the recommendation of the Estimates Committee for the setting up of a Central Council of Mental Health and recommended that a Mental Health Advisory Committee be set up under the aegis of the Central Council of Health and that the constitution, functions and procedure of the Advisory Committee be determined by the Chairman of the Council.

The Government of India have accepted this recommentation and decided to establish a Mental Health Advisory Committee with the following composition :—

Chairman :—1. Union Minister of Health; Members : —2. Two State Ministers of Health; 3. Secretary, Ministry of Health (In his absence, Deputy Secretary); 4. Director General of Health Services; 5. One representative of the Ministry of Education; 6. Three Mental specialists in charge of Mental Institutions; 7. One representative of Central Social Welfare Board; 8. One representative from professional associations of Psychiatrists; 9. One representative of the Indian Medical Association; 10. Two Non-official members; Secretary :— 11. Assistant Deputy Director General of Health Services.

The members of the Committee will hold office for a term of three years. The duties and functions of the Committee will be to advise the Government generally on matters relating to the promotion of Mental Health and the running of Mental and other institutions and other connected matters.

Mental Health and Hygiene

The Government of Maharashtra has constituted an advisory board on mental health and hygiene under the chairmanship of the Minister for Public Health. The Deputy Minister for Public Health is the vice-chairman of the board and the Surgeon-General is its secretary.

The other members of the board are the Secretary, Urban Development and Public Health Department or his representative; Superintendents of the Mental Hospitals at Poona, Thana, Nagpur and Ratnagiri; Mr. A. T. Patil; Mr. M. D. Tumpaliwar, M.P.; Mr. V. N. Patil, M.L.A.; Mr. Shripatrao Kadam (Bhir); Dr. K. R. Masani; and Mrs. J. H. Vakil of the Home for Mentally Backward Children, Worli (Bombay).

The board will advise the Government on all matters connected with mental health and hygiene, including the improvement of mental hospitals in the State and prevention of mental illness. The tenure of the board is two years.

Cheaper Milk Powder

The National Dairy and Research Institute, Karnal, has evolved a simple and economic method to make skimmed milk powder.

This powder can be kept fresh for six to eight months under tropical conditions. It can be used in the manufacture of toffees.

The production cost of this powder is nP 66 a pound. The cost of imported skimmed milk powder is Rs. 1·37 a pound.

The technique and equipment have been standardised by Mr. S. C. Ray, Director of Dairy Development, Government of West Bengal and Mr. R. Srinivasan, Mr. Sukumar and Mr. K. C. Nayar of the Technology Division of National Dairy and Research Institute, Karnal.

Cheap Balanced Diets

The West Bengal Cabinet recently approved a scheme for improving the dietary pattern of the people by a partial substitution of rice by wheat products in collaboration with the organisation "Wheat Associates" representing the organised wheat farmers of United States.

Under this scheme, two mobile units will demonstrate the preparation of cheap balanced diets which will include food of various kinds prepared mainly from wheat and wheat products. Food so prepared by demonstration units will be distributed free. Units will operate primarily in development blocks with special drives in districts deficit in rice. "Wheat Associates" have agreed to supply a demonstration vehicle and necessary equipment at a cost of Rs. 37,000 and also to contribute annually Rs. 30,000 for each unit to meet partially the recurring costs of operation.

Men Outnumber Women in Calcutta

Calcutta is the "most masculine city in India", there being 1,754 men per 1,000 women, according to Dr. J. F. Bulsara, adviser to the Planning Commission for Community Development.

He said that next to Calcutta came Bombay with 1,666 males for 1,000 females and "happily Jamshedpur has 1,250 men against 1,000 women." Dr. Bulsara was addressing the Jamshedpur Rotary Club on the Urban Population in India".

Protection against Poliomyelitis

Poliomyelitis is fairly prevalent among children in Calcutta, particularly among the upper classes. The disease can be prevented by immunisation by poliomyelitis vaccine.

The Government of West Bengal has opened an immunisation centre for this purpose at the Department of Pathology and Bacteriology of Seth Sukhlal Karnani Memorial Hospital, Calcutta. The centre is kept open two days in the week, viz., Tuesdays and Saturdays, from 9-30 A.M. to 11 A.M.

A child requires three injections. A fee of Rs. 18 is charged for each child in advance before the first injection is given. The examination of blood is done free of charge.

Degree in Nursing and Pharmacy

West Bengal is going to have two professional colleges, a College of Nursing and a College of Pharmacy with power to confer degrees, during the Third Plan period.

The State Government has decided to establish the two colleges in view of the demands for qualified nurses and pharmacists. The two colleges will be the first of their kind in the eastern region. The colleges are expected to come into being in August, 1964. Meanwhile, the Burdwan University authorities have been approached by the State Government to establish their Medical Faculty to which the Bankura Medical College, which has just been taken over by the State Government, and the College of Nursing and the College of Pharmacy will be affiliated.

Both the colleges are going to be located within the Burdwan University Campus and for the purpose two plots of land measuring 56 bighas have been kept reserved. Both the colleges will have a four-year course of study leading to B.Sc. in Nursing and B.Sc. in Pharmacy, respectively.

There are only four nursing colleges in India, one each at Delhi, Vellore, Hyderabad and Bombay. India has now only five colleges of pharmacy, one each at Banaras, Saugar, Bombay, Hyderabad and Ahmedabad.

Hospital for Labourers

As a result of the efforts of the State Government the Employees State Insurance Corporation has agreed to construct a 150-bedded hospital with staff quarters at Indore. The hospital will be constructed in Nandanagar Labour Colony at a cost of Rs. 30 lakhs, and will benefit about 28,000 insured workers of Indore city.

During the Third Five-Year Plan period such hospitals will also be opened at Gwalior (75-beds), Ujjain (50 beds), Raipur (75 T.B. beds), Jabalpur, etc.

In Madhya Pradesh at present 37 dispensaries are working under the Employees State Insurance Scheme and benefiting a large number of labourers and their families. A programme for construction of buildings for housing these dispensaries is also being implemented.

Family Planning Workers

Two more regional centres for training family planning workers are expected to be opened shortly. These will be loacted in Gujarat and Bihar. No decision has yet been taken on the site for the proposed centre in Gujarat. Official thinking, meanwhile, appears to favour Baroda.

There are centres already in Delhi, Bombay, Ramanagram in Mysore and most States. These provide two-month training courses to between 30 and 50 persons at a time.

TB Clinic in Every District of U.P.

Every district of U.P. will have a tuberculosis clinic in the third Plan period. This announcement was made by Chief Minister Gupta when he inaugurated the 10th anniversary celebrations of the Vrindaban Tuberculosis Sanatorium.

Mr. Gupta announced an additional annual recurring grant of Rs. 10,000 and a non-recurring grant of Rs. 30,000 to the sanatorium which has now 300 beds against 30 when it was started 10 years ago. He also announced a Government grant of Rs. 50,000 to the Ramakrishna Hospital, Vrindaban. Mr. Gupta later laid the foundation-stone of a 50-bed isolation ward in the sanatorium.

After-care Home in Hyderabad

The Andhra Pradesh Government have sanctioned the establishment of an after-care and rehabilitation centre in Hyderabad with assistance from the Government of India. Under the scheme, buildings estimated to cost about Rs. 4 lakhs are being constructed near the tuberculosis hospital, Irrumnuma, Hyderabad.

The Government have sanctioned the establishment of seven tuberculosis clinics, four in Andhra area and three in Telengana area during this year.

Seminar on Filaria

The Health Minister of Gujarat, Mr. Maneklal Shah, said on 4-6-61 that poverty and disease were the two big problems that faced the nation today.

Mr. Shah was inaugurating a seminar on filaria at the Medical College auditorium. Secretaries of municipalities and local boards, District Health Officers and Sanitary Inspectors were attending the seminar. He said that filaria "is spread by mosquitoes which breed in filthy pools" and called upon the participants to inculcate cleanliness in the rural people. He asked municipal bodies to outline measures to combat this disease.

Earlier, Dr. N. D. Mehta, Assistant Health Director, Gujarat, told the seminar that a population of 3,500,000 was exposed to the risk of filaria infection in the State. Measures should be taken to protect these people. "Some 64·3 million people live in filaria zones in the country and are constantly exposed to the risk of contracting the disease" Dr. Mehta said.

In Gujarat, he said, there were three filaria control centres, each looking after a population of 300,000.

Dr. A. K. Krishnaswami, Deputy Director of Malaria Institute, New Delhi, who had specially come to guide the deliberations, said that this kind of seminar which discussed scientific and administrative measures for the control of the disease was a new venture and that such seminars should be held in other parts of the country. He further said that recent investigations conducted by the Malaria Institute revealed that a number of areas which were believed to be free from filaria were actually showing signs of its existence.

CORRESPONDENCE

The Editor is not responsible for the views expressed by correspondents

Oral Hypoglycaemic Agents

SIR,—We read with much interest your valuable editorial observation on "Oral Hypoglycaemic Agents" (*J. Indian M. A.*, **36**: 474, May 16, 1961). The discovery of such agents within the last 2 decades has really made it possible to keep some of the diabetics at least away from insulin therapy. The history of development of these hypoglycaemic substances beginning from carbutamide upto chlorpropamide has been elegantly depicted and their values critically assessed in your observation. Their limitations in therapy, being effective only in selected cases of diabetes, have also very rightly been pointed out. But some of these limitations with sulphonylureas have, however, been possibly overcome by another hypoglycaemic agent, also effective per orally. This is phenformin, a member of biguanide group of drugs. This oral hypoglycaemic agent has not however been covered in your observation. Phenformin is said to be more potent than the sulphonylurea derivatives and has a wider spectrum of usefulness. It is effective in all age group of diabetes labile or stable and also found to be useful in controlling sulphonylurea failure or resistant cases when given alone or in combination with sulphonylureas. The secondary development of refractoriness, so common with the sulphonylureas, is again less likely with phenformin. With all such advantages, it appears that phenformin really "promises to play a role not hitherto filled by diet, insulin, or sulphonylureas. Obviously any discussion on "Oral Hypoglycaemic Agents" without covering this important biguanide drug seems to remain incomplete, specially when phenformin is being accepted as a pharmacopoeial drug and has already undergone thorough clinical investigation. I am, etc.,

Calcutta. T. S. DE,
B.SC., M.B.B.S., D.I.H.

* * * *

Thanks are due to Dr. T. S. De for drawing attention to biguanides—a promising group of oral hypoglycaemic drugs. If no reference was made to them in the editorial, it was because they have yet not been subjected to a sufficiently long clinical trial—ED., *J. Indian M. A.*

Wastage in Medical Colleges

SIR,—Dr. M. J. Writer's definition of wastage in medical colleges (*J. Indian M. A.*, **36**: 486, May 16, 1961) is different from what many of us would call wastage. The real wastage can be judged from the number of ladies (very rarely men) who do not practise medicine in any form due to family occupations. Being attached to a medical college, I can on a rough estimate say that this number comes to more than 30 per cent. For the last two or three years, the number of ladies seeking admission to medical colleges is rising rapidly; so it would be wise and proper to restrict the number of female medical students. That is the only way of preventing wastage. I am, etc.,

Churchgate, A. F. GOLWALLA,
Bombay 1. M.D., F.C.P.S., F.C.C.P.

Tea Garden Doctor's Fate

SIR.—I have read the letter of Dr. Bachaspati (*J. Indian M. A.*, **36**: 428, May 1, 1961) under the same caption as above.

Dr. Bachaspati's letter is baseless and misleading so far the Private Managing Agencies managed by Europeans are concerned. I have been in the medical service of the Tea Industry for over 30 years and I am acquainted with the procedures of the Tea Estates under European Managing Agents and the Indian Tea Association.

The scale of pay for licentiate doctors is Rs. 155-9-335 and not Rs. 155-6-335, as mentioned by Dr. Bachaspati. The servant allowance is Rs. 55/- per month in all cases. I cannot believe that some false picture of enhanced pay on completion of probationary period is presented by the Managing Agents. All facilities, i.e., provident fund, leave with wages and travelling allowance and bonus, etc., are given to the doctors. The doctors are not entitled to the fees for issuing sick certificates to labourers and it is not mentioned in the Plantation Labour Rules 1956. However, I understand, the parent body of the Indian Medical Association is negotiating with the Indian Tea Association regarding payment of this fee to the Assistant Medical Officers.

I do not think that lives of Bengalees are hazardous in tea gardens. During the July disturbances the authorities offered all possible help to the Bengalees and in my case, my Assamese colleagues in the garden also offered me their help. I know of only four Assistant Medical Officers in this district who suffered some loss during that time.

The Managers and the Head Clerks are not Kings. They have nothing to do in the Medical Department of a tea garden. The Assistant Medical Officers (doctors in charge of garden hospitals) are under direct control of the Principal Medical Officers. I am, etc.,

Murmuria Tea Estate, T. K. ROY,
Cinnamara P.O., *Assistant Medical Officer*
Assam.

KURAZOL

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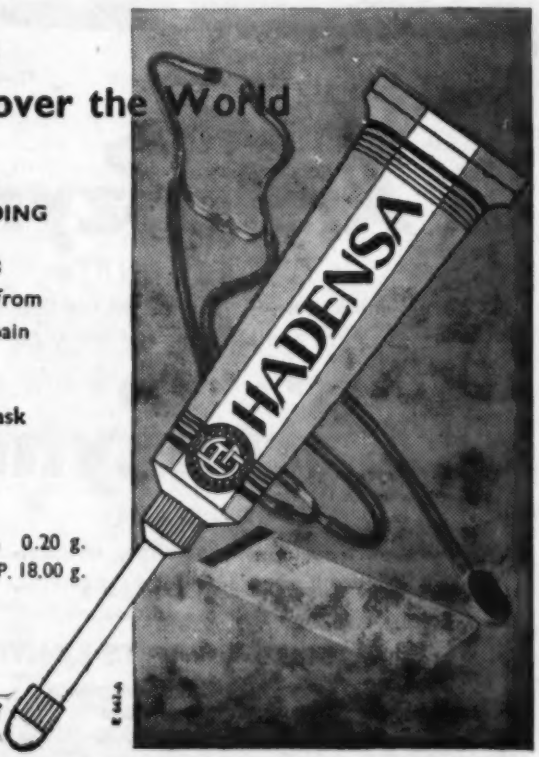

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CALCUTTA-20

A Case of 'Ramsay Hunt' Syndrome

SIR,—A Hindu male, aged 35, was admitted into the wards of Dr. V. S. Raghunathan, King George Hospital, Visakhapatnam on 14-3-61 with complaints of severe burning sensation over the left shoulder region, on the left side of the neck and face, and on the pinna of the left ear, for the last 20 days. The onset was acute, and was associated with fever and malaise. On the same day he noticed vesicular eruptions over the left infra- and supra-clavicular regions in a linear fashion, as well as on the left side of the neck. The patient experienced severe burning sensation along the distribution of the rash. He also had the same type of feeling of burning and a couple of similar vesicles over the pinna of the left ear.

Two days later the patient complained of deviation of the mouth to the right side and he was unable to close the left eye properly. Subjectively, there was blunting of the sensation of taste on the left half of the tongue.

There was no previous history of any eruptive fever.

Physical examination—On admission the general condition of the patient was fair and he had no fever.

A few vesicles were seen over the infraclavicular region on the left side in a linear distribution, as well as on the left side of the neck. There were also a few similar vesicles in the left axilla, in the pit as well as over the folds, and some over the forehead and on the front of the chest.

Central nervous system—There was lower motor neurone type of facial paresis on the left side.

There was no auditory impairment. There was only slight impairment of the sensation of taste on the anterior 2/3 of the left side of the tongue.

Other cranial nerves and the rest of the nervous system were normal.

On 18-3-61 the patient was seen by an assistant of the E. N. T. surgeon who reported as follows:

The patient showed facial paresis of the left infranuclear type. Apart from this there was no abnormal pathology. Left ear—T.M. was normal without any abnormality. Auditory meatus—no vesicles nor any healed scars were seen. There was no impairment of hearing.

Summarising, the patient had a facial paresis of the lower motor neurone type on the left side, with healed scars of herpetic eruptions over the left supra- and infra-clavicular regions. The vesicles were in the nature of chickenpox. There was a definite history of burning sensation over the left pinna and in the auditory meatus, associated with vesicular eruption on the pinna of left ear. This clinical picture fits into a combination of varicella with herpes zoster. The interesting feature of this case is a concomitant facial palsy, suggesting a diagnosis of Ramsay Hunt syndrome.

Will any reader kindly enlighten me on this matter? I am, etc.,

Visakhapatnam. A. BAPIRAJU, M.B.B.S.

REVIEWS

Louis Pasteur—By Jacques Nicolle; 1961, Hutchinson & Co. (Publishers) Ltd., London; 9"×6", pp. 196; 35s. net.

This book is not just another biography of Louis Pasteur. Primarily, it is a narration in chronological order of the ten major pieces of research work which Pasteur undertook and resolved with his apparently uncanny ability. It is indeed amazing to know how the chance discovery of a small fact on a crystal of paratartrate led to a chain of discoveries culminating in the revelation of the causative organisms of infectious diseases of man and animals, and the laying down of the methods of their prevention. The rare genius of Louis Pasteur thus virtually changed the face of the world about the middle of the nineteenth century. A young chemist, intent on the study of crystallography, steadily grew up to the stature of a saviour of the suffering humanity.

The ten major discoveries of Louis Pasteur involved the tartaric acid problem, fermentation, spontaneous generation, the production of vinegar, the diseases of wine, silkworm diseases, the brewing of beer, anthrax, chicken cholera, and rabies. The rare human endowment of Louis Pasteur, his flashes of intuition, his critical methods of investigation developing upon the integrity of his mind, and the beauty and clarity of his arguments, make the history of these discoveries indeed very exhilarating to read. Written by a person, who lived for some years at the Pasteur Institute in a room opposite to that in which Pasteur died, and who had been an intimate associate of members of Pasteur's circle, the details of the narration have distinct marks of authenticity.

The epic of Louis Pasteur is undoubtedly more thrilling than the best adventure story. This is made quite fascinating by faithful exposition of the sequence of logic guiding Pasteur's thoughts. The clarity and lucidity of expression of these intricate thoughts make the reading more attractive.

The work of such a great master of science should stimulate the younger scientists to devote themselves to widening the horizon of knowledge by painstaking and perseverant research. For, in the words of Louis Pasteur himself, "It is by reading what discoverers have done that we light and maintain the sacred flame of discovery".

D. C. L.

Essentials of Medicine for Dental Students—By A. C. Kennedy, M.D., M.R.C.P.E., F.R.F.P.S.; 1960, E. & S. Livingstone Ltd., 16 and 17 Teviot Place, Edinburgh; 8⅓"×5¼", pp. 272; 25s. net.

The book which is based on lectures given by the author to dental students, contains the essentials and principles of general medicine. This is not a short synopsis of one or more bigger text-books of medicine. It lays special stress on points or aspects which might be of particular importance from the dental student's point of view. Disorders such as facial pain and haemo-

philia, of which the dentist should have a fuller knowledge, are dealt with at comparatively greater length. Principles have been emphasised. Relevant anatomical and physiological description in brief, forms the opening portion of most chapters. Line drawing and tables have been included throughout the text and illustrative skiagrams and clinical photographs in the appendix at the end.

The volume is well produced and delightful to handle and maintains the high standard of the publishers.

S. K. NANDY

OBITUARIES

Dr. C. Mohan Rangam

Dr. C. Mohan Rangam, Professor of Pathology, M. G. M. Medical College, Indore, died on May 22, 1961 when swimming in a pool. Death was due to heart failure.

Prof. Rangam was born in Kuppam (Andhra Pradesh). He graduated in Medicine from the Madras Medical College and obtained his M.D. in pathology. He did his research work in Leeds (U.K.) for two and a half years. He joined military service in the II Great World War. After demobilisation, he was appointed Assistant Professor of Pathology in Madras Medical College. In 1950, Dr. Rangam was appointed Professor and head of the department of pathology which post he held for 11 years.

Dr. Rangam was the president of I.M.A., Indore branch, during 1958-60. He was secretary of the Indian Association of Pathology for the last two years, and was associated with many public bodies.

Dr. Rangam was only 46 at the time of his death. He left behind his wife, two sons and one daughter.

Dr. Mrityunjoy Sen

Dr. Mrityunjoy Sen was born in the year 1900. He passed the matriculation examination in 1916, I.Sc. in 1918 and M.B. in 1924. He stood first in Anatomy and Surgery and obtained Goodeve and Rustomjee and Maneckjee scholarships. He also passed the D.T.M. and D.P.H. with credit.

Dr. Sen was Health Officer, Nadia Municipality for 2 years, Teacher of Hygiene in Nadia Girls School and Medical Officer of Scottish Church School for many years. He joined Indian Medical Service in the last great war but retired on grounds of health in 1946.

Associated with St. John Ambulance Brigade, Biswanath Ayurved Bhavan, Astanga Ayurved Bhavan, etc., Dr. Sen was an active member of I.M.A., Calcutta branch, for many years.

Dr. Sen died on January 5, 1961, of coronary thrombosis.

Dr. Nil Kanta Bhattacharjee

Dr. Nil Kanta Bhattacharjee, a private practitioner at Agartala, suddenly breathed his last on May 10, 1961 at his consulting room while examining patients. He was 69.

Dr. Bhattacharjee was a scholar throughout his student career and stood first in the final L.M.F. examination from Dibrugarh Medical School, Assam.

With the idea of serving the people in rural areas he started private practice in his own village at Baurkhand, Tripura (East Pakistan). He was very popular in his area and was associated with many benevolent organisations. He was always a friend and guide to the poor and the needy.

After partition of Bengal, he migrated to India in 1950 and since then was practising at Agartala. He was one of the founder members of the Tripura Branch of the Indian Medical Association and took keen interest in the activities of the Association. The local branch of the Association has lost a very enthusiastic and sincere member by his death.

He left behind besides his widowed wife, six children and many friends and well wishers to mourn his death.

DR. C. MOHAN RANGAM

DR. MRITYUNJOY SEN

DR. NIL KANTA BHATTACHARJEE

SUPPLEMENT
Journal of the Indian Medical Association

Vol. 37, No. 1 CALCUTTA July 1, 1961

IV KERALA STATE MEDICAL CONFERENCE, 1961, PALGHAT

The 4th Kerala State Medical Conference was held on 5-3-61 and 6-3-61 at the Government Hospital Campus, Palghat, synchronising with the Centenary Celebrations of the Hospital, and was inaugurated by Sri V. V. Giri, the Governor of Kerala, at 10-30 A.M. on 5-3-61. The inaugural session was attended by delegates from all parts of Kerala and a large number of invitees, including Sri V. K. Velappan, Health Minister and Dr. T. Bhaskara Menon, Director of Health Services, Kerala.

Inaugural Address

The Governor while exhorting the members of the medical profession to dedicate themselves to the service of the sick and suffering, laid special emphasis to rural health problems and medical aid.

Welcome Address

Dr. A. K. Raghavan, Chairman, Reception Committee extended a hearty welcome to the gathering. He said *Inter alia*, "Medical Science has gone very far in the direction of preventive medicine. But no preventive medicine will be of much use, unless provision is made for guarding the health of the people. Good health resists the insidious attacks of disease producing organisms. The foundation of good health is nutritious food and proper exercise. The first thing, therefore, in which the medical profession is interested, is that the State should provide at least two meals a day for every one of its citizens. From my long experience I can say, without fear of contradiction, that insufficient nourishment is the cause of most of the diseases, apart from any direct infection that may take place. The production of food is, of course, not a department of activity with which the profession is concerned. But I think I am entitled to plead that, in the national interest, a programme should be laid down which will give sufficient food for our people.

Closely connected with the food problem, is the question of the increase of population. Here also the medical profession can play a very decisive role.

Fortunately, the Union Government and the States have all realised that it is extremely important to prevent the increase of population. This can be done by popularising Family Planning. Closely allied to Family Planning, is the Problem of Sterilisation, accomplished so easily by what is more or less a minor operation. I am glad to learn that sterilisation by surgical operation is becoming more and more popular. But, unfortunately, it is only the well-to-do classes that resort to it. Among those classes, as it is, the birth rate is not so high. It is the poor that produce more mouths than they can feed. It is, therefore, to the poor that we must appeal to seek the aid of modern medicine and surgery to avoid being burdened with families which they cannot maintain. No doubt, the medical practitioners, both private and State employed, can help in this direction. But public co-operation, especially that of the poor, has to be enlisted by a nation-wide propaganda and the climate created which would increase the number of poor men and women who will resort to our hospitals and clinics.

It has been suggested in some quarters that there should be an integrated system of medicine. That was tried in Madras and was not found successful. To my mind, what is needed in India today is, that there should be an intensive research into the medicinal properties of the indigenous drugs that have been in common use in the Ayurvedic and other systems during at least two thousand years. When the therapeutic value of these drugs is ascertained and tested, they should be included in a new pharmacopoeia and made available in standardised forms to the medical profession. To attempt more than this would only make for confusion and may retard the advance of medical science in India.

Till a few years ago, Government had made provision for the medical inspection of students in Government educational institutions. Unfortunately, for what reason I do not know such inspections have ceased to be held. I would most strongly urge on the Government that they should make provision for medical inspection in schools and colleges, not only those belonging to Government but which are under private management. It is unnecessary to make out a case for medical inspection. The advantages are obvious. If regular medical inspections are held, doctors would be able to detect lurking defects and nip them in the bud. This is not a small matter. I would ask the Association to impress on the Government the importance of this matter.

Before concluding, I wish to draw the attention of the Association to a new menace that is threatening the health of the people of Kerala, living in rural areas. Hitherto, Filariasis was more or less confined to the coastal areas. Recently, it has been discovered that filarial infection is prevalent in rural centres as well. Unless very active and urgent measures are taken to prevent the spread of the trouble, there is the possibility of the beautiful countryside of Kerala being made ugly and unwholesome in the near future.

Dr. Chakko George, one of the outgoing Vice-Presidents, who handed over the insignia of office (in place of Late Dr. E. K. Raman Pillai, the President) to the President-elect, Dr. Lt. Col. G. R. Parasuram, made a short speech, laying particular stress on rural medical aid and the part, voluntary organisations like the Bharat Sevak could play, in running rural health schemes.

Presidential Address

Lt. Col. G. R. Parasuram in his presidential address said "It is my painful duty to record here our sad bereavement on the passing away of our President, Dr. E. K. Raman Pillai of Quilon, and recently again of Dr. S. S. Rao of Cochin, a past president, and one of the pillars of the I.M.A. in Kerala State.

I am proud that this conference coincides with the Centenary Celebrations of the Palghat Hospital, where I had served as the medical officer for a shortwhile in the twenties, and which has just completed a hundred years of glorious service.

This is the fourth conference of the Kerala State Branch of the Indian Medical Association, and the first ever convened in this historic town of Palghat. It gives

me added pleasure to preside over such a function in my own Home Town. We have on the rolls of the I.M.A. today in Kerala about 800 members and there are some more of the profession, who have yet to join the Association. Only by the constant, co-ordinated efforts of the State and branch associations will we be able to get all our colleagues in the profession into the association, and foster and forge unity and strength to our association. Our united voice alone, will compel attention be listened to with respect, and our opinions treated with due regard, by the public and the state. In my humble opinion the Indian Medical Association should be made so strong that the Government should consult it on all subjects relating to the medical profession and medical education in the country. I call upon every member of the profession to join the association and give it the unity and strength, that is its due.

I feel that our State branch and every other branch should own their own premises and attempts to achieve the same before the next annual meeting should be our objective. Every branch office should have an up-to-date library and all standard books and journals for ready reference.

MEDICAL ETHICS :

I would like to remind ourselves of our duties and liabilities to ourselves and the public and thus Keep up our traditional reputation of sincerity, integrity and honesty that we have built up and demand by our conduct, the respect of the judiciary, the Government and the public, not minding an occasional unfair criticism. The statement made sometime back from certain responsible quarters, that alcohol and alcoholic medicines were being freely prescribed by the profession, should not go unchallenged. Prosecutions and suits for damages involving medical men, though now fortunately rare in India, should not be lost sight of.

Thanks to the unification brought about by the pioneers of the Indian Medical Association, the class war has practically disappeared from our midst and much better understanding and more cordial relationship exist today among the members of the profession.

In some states there is a move to produce a cheaper type of medical men to meet the shortage of doctors. We have now to protest with all our might against this retrograde step and prevent it, in the interest of the public and the profession. I hope that the idea of mass production of ill-equipped doctors, whatever the reasons for this retrograde step, will not be implemented as such step is bound to lower standards, impair efficiency, and cause undue friction among us. In this connection Dr. Lakshmanaswamy Mudaliar, the President of W.H.O. while appreciating the need for more qualified doctors said "one well trained doctor could turn out much better result, than half a dozen illequipped and inexperienced persons."

The statement that "If the vast number of Ayurvedic doctors are taken into account the dearth of medical men need not be envisaged and we will be having all the eighty five thousand and odd doctors that we need", should not go unchallenged. And there is a fallacy here. We see anybody and every body practising medicine without let or hindrance. Is this quackary or not? If it is, we have to stop it irrespective of political or other considerations. A system of medicine that does not take into account the fundamentals of Physics, Chemistry, Biology, Anatomy, Physiology, Psychology, and correlate these with the pathology and signs and symptoms of disease, of mind or body, is not modern medicine, but anything else. Ayurveda, Unani or Sidha, may be they have a useful purpose to serve. I have a good many friends among them, but I cannot visualise them as practitioners of medicine. There must be only one system of medicine, and that is modern medicine. It is in Kerala, Ayurveda is preached and practised widely. It descends from father to son and has been so without any material change for thousands of years. What we want is one unified modern medicine in which is incorporated the best of all systems of medicine, and Kerala is pre-eminently fitted to bring this about. It is the duty of the state in consultation with the Indian Medical Association to bring this about. Any scheme touching public health and medical education to be successful in a welfare state has to be planned by a committee of eminent medical men in consultation with the Indian Medical Association. Non-medical men, however great they may be, are not fit for the job. We are definite about it. The legislatures which pass large sums of money on health schemes and allied subjects, are conspicious by the absence of doctors in their midst. It is an immense advantage to have distinguished members of the profession in the legislatures and in the various planning and development forums. In all humility we submit this to the Government for implementation. The unofficial efforts of one of our past presidents to get this done proved a failure and hence this appeal.

PREVENTIVE MEDICINE :

Vaccination and preventive inoculations should be made compulsory at the school level. Health consciousness has to be created by propaganda. Health education has to be given in all schools. Medical inspection of school children is almost extinct and wherever it is practised, is a farce. Early detection and treatment of children's ailments is essential and if tackled at the right time, there is a lot of saving of manpower and avoidance of unnecessary waste of money, time, and energy, as the child of today is the citizen of tomorrow.

Another question of importance is the malnutrition of children of school going age. Consequently, the need for mid-day meal for the school children is the duty of the public and the state. This needs immediate solution. Consequent with the advancement of industrialisation in this country there is need for the development of industrial medicine including health insurance scheme etc.

LEPROSY, TUBERCULOSIS, MALARIA AND FILARIA :

The two infectious but preventable scourges of mankind in our country, namely Leprosy and Tuberculosis, need special mention. The identification of cases of Leprosy, their isolation wherever required, their efficient treatment and measures to protect the ordinary citizen —all constitute a vast problem, which has to be tackled. Luckily, the W.H.O. (World Health Organisation) has made it easier of solution. The mass propaganda set out by that body, together with the resources made available in an unprecedented global scale, needs special mention. B.C.G. Vaccination in this connection helps in their prevention and cure. Our ultimate aim should be to control and totally eradicate these diseases from our country. Likewise, with the increase in irrigation facilities that is taking place in the country, Filaria, which was once a disease of coastal areas, is now spreading into the interior areas, and has to be tackled. Thanks again to the W.H.O. Malaria, another wide spread disease in the country is now becoming, rare. Mass propaganda and free medical aid go a long way in the control of these diseases.

PSYCHIATRY :

Psychiatry is likewise a growing subject gaining importance. The last war statistics show that a large number of casualties were psychiatric in origin. Of these, only a small percentage were cases of psychotic origin. All the rest were psychoneurotics, being misfits into military life, and in a good many of them, the condition of hysteria or anxiety was built on a somatic basis, and the recovery rate became fairly high, soon after they got out of the defence forces. It is true that there is a physical basis like an old injury or some disease in some part of our anatomy on which the symptoms of hysteria are built and to which the symp-

L-R—SHRI V. V. GIRI, GOVERNOR OF KERALA WHO INAUGURATED THE CONFERENCE; DR. A. K. RAGHAVAN, CHAIRMAN OF THE RECEPTION COMMITTEE; LT. COL. G. R. PARASURAM, THE PRESIDENT OF THE CONFERENCE; DR. T. K. KESAVAN NAIR, THE ORGANISING SECRETARY; DR. P. R. PARASURAMA IYER, JT. SECRETARY AND TREASUER.

toms were referred to by the sufferer, but the symptoms persist long after the healing of the original injury or disease, or the physical disability is so slight and insignificant and not sufficient to produce a suffering out of all proportion to the original basic injury or disease. A psychological hurt is converted into a physical somatic symptom, and therefore, it is a psychological approach that they need and not all the bitter pills they are made to swallow. Thus the necessity for a psychiatric service arises, and one of the ways of meeting the shortage of medical personnel, is the starting of psychiatric clinics in all District Hospitals and the provision of a few beds in each hospital for tackling such cases. Practise a human touch in your dealings in the care and management of the mentally afflicted, and you will have attained a good deal.

The Kerala Government towards the latter part of 1959 appointed an expert committee of three, of which I was the chairman, to investigate the condition of the three Mental Hospitals in the state, and suggest improvements on a phased plan. This Committee after visiting the hospitals in the state and elsewhere and after useful discussions, submitted its report and recommendations early in 1960. The committee pointed out the various defects as they existed, and suggested ways of improvement, some of which to be implemented immediately; some early, and the rest in due course. It is getting almost to one year, and the last I know about it is, that it is, being considered by the Government Mental Hospitals, as they exist today, are mainly intended for the custodial care of the mentally deranged. Unless there is a constant ingress and egress of patients especially of the early and acute type, the hospital is unlikely to offer efficient therapeutic service, or remove the bias widely prevalent, against the institution. I am sure, the Hon. Minister for Public Health in Kerala will consider the importance of this subject and pass early orders regarding implementations of the various recommendations contained in the expert committee's report.

MEDICAL EDUCATION :

We are expanding too rapidly and are likely to produce medical men at the risk of efficiency. There should be only one class of medical men and that is the Medical Graduate qualified in modern medicine. Admission to Medical Colleges should be restricted to Science Graduates and no others. Merit and merit alone should be the criterion for admission to the Medical Colleges. Admission on any other consideration is bound to impair efficiency and every medical student seeking admission should give an undertaking to practise medicine during his life-time as otherwise the money spent on his education becomes a collosal waste. This is particularly so, in the case of women.

We want A Class Doctors or none at all, whatever the nature of their duties. Whether it is in the state general hospital or in the remotest rural dispensary, we want efficient doctors to work there. While all sacrifices can be demanded from the doctors as part of their duties, the doctors have in their turn the privilege of asking for living wages. They should be paid beyond temptation. The people who give health should themselves have reasonable standards of living, to keep them in good health.

One great headache is the linguistic fad. In our anxiety to demonstrate patriotism, we need not go out of the way to insist on throwing out every thing that is not Tamil, Malayalam, Hindi etc. Some of our southern boys are handicapped by not being able to follow the lessons given in the pre-professional course in institutions elsewhere in India. The language for technical education should be English only so far as we are concerned for a long time to come. At the same time we can make every effort to replace it by one language only and not all the Indian languages. A substituted language is a dangerous experiment.

DRUGS :

There are certain essential drugs which we need badly, and which, unfortunately are not available in India. Within limits, these drugs should be allowed to be imported from abroad. I fully appreciate the financial implications, but we cannot help it. Cheaper replacements are certainly not really economical. Vast sums are being spent in various drugs manufacturing research laboratories in other countries, with the most eminent scientists at the helm of affairs, over long years, to produce a single worth-while remedy. Often, the entire money and labour become a waste, but even that helps in the production of the next remedy. Our aim should be to produce worthwhile remedies and not duds. It is the duty of the state to encourage in all possible ways, the production of drugs of a high standard. Advertisements of certain remedies in the lay press which cause fear and anxiety, should be banned. In our anxiety to nationalise everything, private enterprise should not be choked.

The profession, the public and the State should all display the same if not greater solicitude for public health as is displayed in other departments of national welfare and this must go hand in hand and with the material well being of all medical workers and improving their working and living conditions. That is which is expected of a welfare state."

The Governor of Kerala next laid the foundation stone of the proposed Indian Medical Association branch building at Palghat, and the function concluded after a vote of thanks by Dr. K. S. Venkitachala Iyer, President of the Palghat Branch.

The first scientific session was held at 6 P.M. presided over by Dr. R. Kesavan Nair, Professor of Surgery and Superintendent, Medical College Hospital, Trivandrum, and was addressed by Dr. C. R. Subramanian and Dr. Krishnamurthi of Coimbatore, who spoke on elective gastric surgery and colonic cancer, respectively.

The second scientific session was held on the forenoon of 6-3-61, presided over by Dr. K. Madhava Menon, when Dr. A. T. John, Professor of Paediatrics, Stanley Medical College, Madras, spoke on his observations on certain aspects of Meningitis in Children in South India.

The third scientific session which followed in the afternoon, was presided over by Dr. M. N. Menon of Coimbatore, and there was a seminar on Hypertensive Heart Disease in which Dr. C. K. Gopi, Trivandrum, Dr. P. K. Krishankutty of Madras and Dr. K. P. Ganesan of Mangalore, took part. The conference concluded with a vote of thanks proposed by Dr. T. K. Kesavan Nair, organising secretary of the conference.

BRANCH NOTES

BHILAI BRANCH—The annual day of the branch was celebrated on 29-4-1961 amidst a distinguished gathering of doctors from Bhilai, Raipur and Durg.

The following papers were read—Management of Diarrhoeas by Dr. K. Desai, Pediatrician, Bhilai Steel Project; Review of 10,000 O.P.D. cases by Dr. S. C. Shiwastava, Bhilai Steel Project; Auscultation of the Heart by Dr. G. P. Shrivastawa, Consulting Physician, Raipur. Homoeopathy where Allopathy has failed by Dr. Rajundale, Raipur.

A symposium on Headache was also held. Dr. G. P. Shrivastava of Raipur presided over it. The speakers were Dr. D. C. Sen, Physician Bhilai Steel Project on Medical Aspect ; Dr. N. L. Kalle, Chief Medical Officer and Senior Surgeon, Bhilai Steel Project on Neurosurgical Aspect; Dr. T. N. Gupta, Ophthalmologist, Bhilai Steel Project on Ophthalmological Aspect and Dr. P. R. Kulkarni, Jr. Surgeon, E.N.T., Bhilai Steel Project on Otorhinological Aspect.

The Clinical meeting was held on 4-5-61 under the new executive comprising of :—

Dr. N. L. Kalle, Chief Medical Officer, President, Dr. H. S. Sathe, Vice-President, Dr. S. C. Shiwastava, Hony. Secretary, Dr. S. Roychoudhury, Jt. Secretary, Dr. B. K. Chawda, Jt. Secretary. The following cases were presented by Dr. Desai, on (1) A case of Active Rickets, (2) Ascariasis giving rise to an Abdominal Lump in a Child and Dr. Kalle on (a) A case of Cancer Oesophagus and (b) Presacral Cyst in a woman.

A clinical meeting was held on 25-5-61 at Sector-I Hospital, Bhilai. A symposium on Congenital Heart Diseases was held. Dr. K. H. Desai spoke on Embryology, Anatomy & Clinical Features; Dr. D. C. Sen on Diagnosis; Dr. Rajguru on Anaesthesia in Cardiac Surgery; and Dr. N. L. Kalle, Chief Medical Officer on Surgical Treatment. The following short cases were also presented : A case of Dermatographia—by Drs. Rao and Shrivastava; a case of Stunted Growth—by Dr. Shrivastava; a case of Patent Ductus Arteriosus—Dr. Sen; a case of Interventricular Septal Defect—Dr. Sen.

BAREILLY BRANCH—An executive Committee meeting was held at the residence of Dr. M. K. Goel on 18-5-61. Seventeen members were present. Minutes of the last meeting were read and confirmed. Progress reports of various sub-committees were taken up one by one.

Membership and attendance promotion committee : Dr. Puri and Chatterjee informed that preliminary data as regards prospective membership has now been obtained and that they will start a campaign for enrolment very soon. It was suggested by Dr. Saxena that in order to promote attendance at clinical meetings it might be a useful plan that each member of the executive committee should bring two or more members with him.

Programme sub-committee : Although monthly programmes are being arranged nearly regularly it was decided that one final objective of the branch should be to have bi-monthly clinical meets. The committee was advised to keep this in mind in formulating future programmes.

Library sub-committee : Dr. Dhillon spoke about the Association Bulletin and informed that it is being printed for the last five months and total number of copies printed is 250 monthly; out of this 150 copies are being sent free to Almora, Badaun, Kashipur, Moradabad, Pilibhit, Nainital, Rampur and Shajahanpur. There has been good encouragement and co-operation from other branches It was argued if it would be proper to fix some price for the bulletin but the executive committee decided that at the present moment the bulletin be sent out free though if the outside branch so desired, a token voluntary contribution could be made or in lieu thereof they could help us by obtaining some advertisements from their local chemists.

Library organisation : Dr. Dhillon informed that a Library Sub-Committee meeting was called in the last month and it was decided that the best way of procuring some useful books was to ask for individual contribution of books. Dr. Chanan Shingh was entrusted the task of working out the details for such collection. Dr. Dhillon also said that according to the last executive committee meeting decision, all journals except Lancet will be discontinued and that instead, from that allocation of 300/- new useful books will be purchased. Three new books costing Rs. 200/- have already been purchased.

Resignations : Five resignation letters were brought to the notice of the committee by the secretary and it was decided that an individual approach be made by the senior members to persuade them to withdraw.

Annual Provincial Conference : It was resolved, if general body approves, that the State annual conference be invited to hold its October 1962 session in Bareilly.

Death of Dr. Y. P. Seth of Pilibhit was mourned. An appeal by the State branch was read out to assist the bereaved family.

There was a clinical meeting of the branch on 20-5-61 at the District Hospital O.P.D. under the presidentship of Dr. C. M. Aga.

Dr. C. M. Aga told the house of the proceedings of the last Executive Committee held on the 18th May 1961 at the residence of Dr. M. K. Goel, which consisted of the reports of the working of different subcommittees, setting up of the library in a proper shape for which some books have already been purchased and orders placed for many others, Bulletin of the Bareilly Branch which the Branch has started issuing since January 1961. He also told the house regarding the programme to visit Bhowali sanatorium and Patwa Dagar (institute where lymph is processed) by the members of the branch.

Dr. R. P. Srivastava, Orthopaedic Specialist, District Hospital Bareilly spoke on the subject Fracture Patella and its treatment and also demonstrated several cases on whom he had operated and most of them showed perfect recovery of normal function and were back to their original job. Dr. A. H. Khan, Dr. P. C. Bhalla, Dr. G. S. Dhillon and others put questions to the speaker which were explained and discussed by him.

BOMBAY TERRITORIAL BRANCH—World Health Day was celebrated by the branch on April 7, 1961 with a Symposium on Accidents and their Prevention at Birla Matushri Sabhaghar from 2-30 P.M. to 4-30 P.M. This symposium was inaugurated by Governor Shri Sri Prakash. Shri A. A. Jasdanwala presided. The following were the participants : Dr. K. M. Bhansali, Dr. A. K. Talwalkar, Dr. B. N. Sircar, Dr. N. S. Vahia, Dr. H. S. Mehta, Shri A. V. Modi, Shri N. L. Gadkari,

DR. C. L. JHAVERI, PRESIDENT, BOMBAY TERRITORIAL BRANCH I.M.A. WELCOMES THE GOVERNOR SHRI SRI PRAKASH AND OTHER GUESTS AND MEMBERS.

Shri I. C. Patel, Shri S. M. A. Pathan and Shri R. M. Malkani.

On behalf of the Bombay Territorial branch, Dr. C. L. Jhaveri, extended hearty welcome to all. He said "Accidents have various aspects, and this symposium has been organised for discussing them. The benefit of this symposium is of far reaching effect, and concerns the humanity of the whole world. I have pleasure in welcoming Shri Sri Prakash, the Governor of Maharashtra, Mr. Jasdanwala, and all assembled. I am grateful to my colleagues for assembling here in such good number, and for giving me the privilege of welcoming you all. I now request you, Sir, to inaugurate our symposium."

Shri Sri Prakash, in addressing the symposium said, "Friends, believe me when I say that I am sincerely grateful to the organisers of this function for the honour they have done me in inviting me here. A galaxy of persons has assembled here to discuss matters not of narrowness, but of high importance. Now-a-days so many persons are ready to discuss problems of narrownesses. Doctors are persons who look after the welfare of human beings. They should not have any narrownesses in their minds.

Bombay is observing World Health Day. Its celebration started in 1948; to-day is the 14th anniversary of this useful celebration. As I gather from the literature supplied to me, we are particularly assembled to discuss the problem of accidents. Accidents have various causes. You will discuss accidents on roads, in industrial works and so on to find ways and means of preventing them. It is natural that you should pay attention to all causes, and mainly to the education of the public for preventing accidents.

I am agreeably surprised that in some parts of Bombay people have a good road sense; elsewhere they are very careless; they do not know even the simple method of crossing roads. The rule is "Look both to the right and the left", but they do not do so, and accidents result. On the Poona-Bombay Road, you must have found to your deep sorrow that 2 or 3 accidents occur daily. When overloaded lorries are driven fast even at difficult bends, accidents are bound to occur, and these may result even in death. It would be better if in schools instead of teaching all about the stars, the moon and the sun, some attention is paid to the teaching of simple civic virtues. Eminent persons like you have taken this task in hand, and I am sure that you will give practical suggestions for educating the public and the children. Many accidents occur in the home, because so many of us are careless. Utensils, knives, pans and several other things are strewn all over the place. With proper education, many accidents can be avoided.

Then there is one type of accident which takes a great toll. Accidents in industrial establishments. Huge machines are in operation, and these form the deeper problem of civilisation itself. Great inventions and devices raised by man ultimately depend on the labour of those who work in impossible conditions, as in the holds of ships, near furnaces, in vehicles of high motion and so on. Take for instance fishermen who go out to sea at night. Civilisation of which we are so proud depends upon the risks that so many workers take. Civilisation must have risks also. We should try to eliminate the risks as far as possible, and see that proper balance is maintained between man and man. While contacting people you should obtain also their affection. Sympathy without rudeness would minimise the number and effects of accidents. With advice and care, and tenderness even while attending to animals much good can be achieved.

It is good that doctors of your high qualifications should exchange views and experiences about various accidents, study how they take place, how they can be avoided, and what is to be done when they do occur,

GOVERNOR SRI PRAKASH INAUGURATING THE SYMPOSIUM.

so that man may not suffer much. I am happy on the choice of the subject. I am very thankful to the organisers of this function for invisiting me. I inaugurate this symposium, and hope it will help to minimise the number of accidents, and losses due to accidents."

Shri A. A. Jasdanwala said, "I am very thankful to the organisers of this function for asking me to preside. I look upon it as an honour done not to me, but to the Safety First Association of India of which I happen to be President. It is a tribute to my colleagues who have worked in the cause of safety. We have done a little propaganda work. With the services of honorary workers we have tried to inculcate the importance of accident prevention. An advisory committee has been set up for the Industrial wing, which is led by Mr. Kewalramani who brings to it his rich experience as retired Chief Inspector of Factories, and it will be always available to industrial establishments for safeguarding their workers and preventing accidents. The committee's advice will be valuable and of particular importance. It is of particular significance that our association helps the industrial associations of even other countries in matters such as industrial relations, the problem of hazards and so on, and has won the recognition of industrial projects for the safety measures and preventive measures recommended. In terms of working hours productivity is not sufficiently appreciated. According to a report of the I.L.O. published after the last war, even in such advanced countries as U.K. and U.S.A., the number of deaths due to accidents is more than the deaths in the last war, which is very amazing because those countries are considered as leaders in prevention. Loss due to accidents in U.S.A. is more than $4200 million. In India also the accident rate has gone up from 100 to 240. It is necessary that our development programme be built upon a sound foundation. We should profit by the experiences of those countries ; we should not repeat their mistakes; we should institute steps to see that the same mistakes are prevented from occurring. I am very happy to see that we have the support of medical men, and the task of rehabilitation would be easier. I think it would be better to initiate the discussions with a talk by one who is not a doctor, because the doctor comes in after the accident. I invite Mr. A. V. Modi managing director of Unichem Laboratories to speak.

Mr. Modi in his paper stressed the following points :—

i. In the pharmaceutical industry different tablets and powders have the same physical appearance, and so there is every chance of labels being interchanged resulting in much harm to people. Therefore very proper care should be taken to affix the proper labels to the proper substances.
ii. when 2 actions in synthesising a compound are interdependent upon each other, if one action fails to function, there must be provision for stopping the other automatically; instance cited was of toluene and another substance being mixed with the aid of a mechanical stirrer. Sometimes the stirrer fails to function, but if the inflow of toluene is not arrested immediately, violent explosions occur, causing much damage.
iii. appliances like gloves and masks must be provided to those who work with acids and obnoxious gases.
iv. safety tests and paper tests must be performed.
v. co-operation between man, machine and material is most essential.

Then Mr. Jasdanwala invited Dr. K. M. Bhansali of Stanvac to speak. Dr. Bhansali before beginning to speak on his subject, stated that the wrong impression that the doctor comes after the accident must be corrected. The human factor is of greater importance than the mechanical part of industry, and so in some places, the mechanical department is kept under the medical department. The main points of his subsequent talk could be summarised thus. Workers are divisible into 2 classes, the accident prone, and the accident liable. Only about 20 per cent are accident prone. In the course of pre-employment examination, if it is found that a particular applicant is accident prone, it would be safe to allot him a job in which there is risk of accident. If somehow or other an accident prone man is put on a hazardous job and he sustains an accident, he should not be allowed to continue on the same job; he should be given other work. Then locations of industries and machines form important points for consideration in eliminating accidents. The responsibility in such matters lies on the management and the medical department; the medical department should give proper advice. He also stated that at the Stanvac Refinery, at the very entrance there is a big board on which the names of the various departments and the number of accidents taking place in each are written in bold letters. The workers see those figures, and those working in departments having a high incidence of accidents feel sorry and try to be more careful in future. Further there are other incentives in the form of awards to departments which record few or no accidents.

Then the president invited Mr. N. L. Gadkari, Chief Inspector of Factories to speak.

Mr. Gadkari read a paper the main points of which were as follows :

Whenever an accident occurs, the employer and the employee indulge in mutual indictment. The employer says that the worker's negligence caused the accident; the worker says that it is a pity that he has to work under an employer who has no thought for his worker and who exposes him to accidents without taking or adopting any protective measures. The supervisory staff must teach the workers how to operate a machine in the proper way, and what ways of working may cause accidents. Further employers should take all precautionary measures, such as protective guards to those parts of a machine which may lead to accidents. Often these things are not done. When an Inspector visited a factory in the mofussil, the management who had previous notice of his visit purposely kept the factory closed on that day. The Inspector saw a low shaft which was unprotected, and he drew the attention of the manager to it. The manager said that every precautionary measure would be gradually adopted, but as the factory had been only recently started—only two or three months ago, there were some things left undone. He forgot that an exposed shaft may cause an accident in the first hour of its working. The manager however assured the Inspector that the shaft would be provided with a guard before putting it into commission again. The Inspector then went on his round to another factory in another village. He had barely reached there, when he learnt to his horror that the son of the proprietor of the other factory had been killed, and the exposed shaft had caused his death. Although an assurance was given to the Inspector that the low shaft would be provided with a safety guard before putting the machine into operation again, no sooner had his back been turned on the "closed" factory, work was started in it, with nothing done to minimise the danger of the low shaft, and the proprietor's son fell a victim to the deadly shaft. Sometimes managements take no pains to minimise accidents. When an Inspector remarked to the management of a factory that the rate of accidents in the factory was high, the proprietor non-chalantly opined that it was only natural that in a factory of the size of his factory some accidents should occur. The fact was that several smaller factories lying round his factory had adopted precautionary measures, with the result that several accidents which were repeatedly occurring in the bigger unit had been completely eliminated by them, though the smaller factories were also liable to the incidence of those accidents. The proprietor of the bigger unit was smug in the thought

that in a factory of the proportions of his factory accidents were only natural. He did not know that the others were not having those accidents at all.

The president then invited Dr. Talwalkar, A. K. to speak.

Dr. Talwalkar said that in his opinion it is Scooters and Motor Cycles which do most damage, and he would go even so far as to say that the use of these vehicles should be banned. He drew the attention of the audience to the rash and reckless driving indulged in by drivers on the Poona Bombay road between Thana and Poona, and also to the much dangerous overtaking that is done. He said that fines in such case should not be only Rs. 10/- or Rs. 15/-, but they should be deterrent. He also pointed out that persons involved in accidents are taken to hospitals by the police for recording their statements; but it is not compulsory that they should remain in the particular hospital to which they are taken. If they so desire, it is open to them to go to any nursing home of their choice. He also said that every hospital should have an orthopaedic department. He gave a short anecdote to illustrate the clumsy and unsatisfactory work done by those other than orthopaedic surgeons.

After Dr. Talwalkar, Mr. I. C. Patel of W.I.A.A. was invited to speak on road accidents.

Mr. Patel said that an increasing number of accidents are taking place, some due to black clothes worn by pedestrians at night and their invisibility in the dark, some due to disregard of regulations, some due to drunkenness, and some due to lack of education as to how and when to cross roads. He said that in Germany people are taught how to use roads with the aid of miniature vehicles; the same method may be adopted in our country also. He thanked the organisers of the symposium on behalf of the WIAA for inviting him to speak.

Then Dr. B. N. Sircar, Anaesthetist of the K. E. M. Hospital was requested to speak on accidents on the Operation Table. Dr. Sircar said that the first and most important thing that an anaesthetist should make sure of was that the patient has a free air passage. He referred to the death of Air Marshal Mukherji who was choked to death by a piece of meat which went down the wrong way, into the wind pipe instead of the gullet, which emphasised the point that a free air passage is a sine qua non of anaesthesia. He said that an anaesthetist should be very careful, because accidents occur very suddenly during anaesthesia. Stopping of breathing is a most dangerous sign; the cardiac arrest is another. He said that he had worked for 40 years as an anaesthetist, but in all that long period he had been unable to fix the cause of cardiac arrest. Through massage the heart may be made to beat, but personally he is never happy until the heart begins to beat of its own accord.

Then the president said that he would request Mr. S. M. A. Pathan, Dy. Commissioner of the Traffic Control Department, a much misunderstood department, to speak.

Mr. Pathan said that speed has become a feature of modern life, and so fastness has become a feature of transport. Referring to Mr. Patel's statement that accidents are increasing, he cited comparative figures of 1955 and 1960 to show that the rate of accidents is reducing. Car accidents had reduced from 25 to 22, taxis from 22 to 21; only in the case of lorries the rate would seem to have increased, but one must remember that lorry transport has also increased in volume. He said that generally speaking accidents do not "occur", but they are "created", and the most important causes are :—

1. Speeding, 2. Rash and negligent driving, 3. Disregard of simple road regulations and of other traffic on the road, 4. Parking at corners, 5. Ignoring to give signals, 6. Defective vehicles not roadworthy, 7. Lack of traffic engineering and proper road servicing and 8. Improper use or total disregard of pedestrian crossings by those who walk on foot. Many people walk mechanically, diagonally and many other improper ways and fall into danger.

He agreed with Dr. Talwalkar in that punishments meted out to offending motorists at present are meagre. He held the view that road offences should be made non-bailable, and further on the spot punishments should be inflicted, because punishment long after the accident loses its psychological effect.

Then Dr. Vahia spoke a few words on the psychological factor of accidents. He said that the worker's main trouble is a nagging boss, and his having to say, "Yes Sir; yes sir" all the time to an officer whom he dislikes. In such a state of the mind he may become listless and fall into accidents. He pleaded that in the pre-employment examination, the psychiatrist must also be called in so that accident prone workers may be detected in the very beginning.

Then Dr. H. S. Mehta was requested to speak. He said that in the Coroner's court, and in the course of litigation doctors are often blamed by insurance companies and lawyers who accuse them of negligence or of attempting to learn from their patients. In reply to such charges he would say that NO doctor ever tries to learn from his patient, but the doctor's motto is to serve human beings to his last living day.

Then Mr. Malkant, Coroner was requested to speak.

Mr. Malkani said that when a machine goes wrong, one has to investigate whether it was the machine that went wrong, or the mechanic operating it. Similarly, when the human machine goes wrong, it must be determined whether the patient went wrong or the doctor. He advised doctors to remain cool and collected while attending on patients, and above all to eschew overconfidence. If doctors observed these two rules, the causes of their having to attend the Coroner's court would be very much diminished. He dwelt at some considerable length on the legal definition of negligence and all its implications and nuances, so that doctors present may take due note of the same, and may guide themselves accordingly, in order not to perform any action which may render them liable to the charge of negligence.

After the Coroner had spoken, Mr. Jasdanwala, president summed up the day's talks. Referring to proper ethical checks like a huge accident board and offering incentives to workers mentioned by Dr. Bhansali, he said that if the private sector in India had the resources of Stanvac, perhaps such methods would be adopted. He pleaded that coloured lights should not be stopped after 9 P.M. as at present, and that psychiatric tests must be taken by the police before issuing driving licences.

The symposium concluded with a vote of thanks by Dr. A. D. Daftary, Jt. Hony. Sec. of the Bom. Ter. Branch of IMA. Dr. Daftary told the audience how he had to book a trunk call to the Governor who was then at Delhi in order to request him to be the day's chief guest, and how the Governor very kindly consented to come. Dr. Daftary thanked the Governor for attending the function, Mr. Jasdanwala for presiding and conducting the proceedings, the various speakers for their papers and speeches, the members of the audience for attending in such good numbers, and the management of the Birla Matushri Sabhaghar for giving the hall. He also thanked Mr. Jani of Andre Laboratories for his hospitality.

COIMBATORE BRANCH—The 30th Annual General Body Meeting of the branch was held on 30-4-61, commencing at 3 P.M. in the Association premises. 150 members were present.

Dr. D. Sundareswaran, the President, delivered the inaugural address. He requested the younger section of the members to take up the reins and run the Association in the interest of the profession. He also suggested the idea of family members of the members of the Association meeting periodically to establish contact among themselves. Condolence resolution on the death

of Dr. U. A. Menon was passed, all members observing silence for about two minutes.

The annual report and the statement of accounts for the year, 1960 presented by the secretary were passed unanimously. The following office bearers were elected : President : Dr. O. T. Gopalakrishna Naidu; Vice-President : Dr. C. V. Rama Raj; Hony. Secretary : Dr. V. Sriramulu; Associate Secretary : Dr. R. Padmanabhan; Hony. Treasurer : Dr. K. R. Venkatasalu. *Provincial Committee members* : 1. Dr. A. G. Leelakrishnan, 2. Dr. C. Arumugham, 3. Dr. C. N. Santhanam, 4. Dr. M. P. Jesudasen, 5. Dr. S. G. Rajarathnam, 6. Dr. G. T. Gopalakrishna Naidu, 7. Dr. R. G. Iyer, 8. Dr. S. Ganapathy, 9. Dr. S. V. Subramaniam. *Central Council* members : 1. Dr. C. Arumugham, 2. Dr. N. K. Sampath, 3. Dr. S. G. Rajarathnam.

After the election, Dr. G. T. Gopalakrishna Naidu suggested the following ideas to be taken over by the branch : (1) A Bacteriological Unit on the model of the Pasteur Institute, Coonoor may be started in Coimbatore and members of the Association may serve in the bacteriological unit for giving relief to the suffering poor. (2) A nursing home of an up-to-date model may be opened with all surgical appliances for giving relief for the people in the district. (3) A medical unit on the model of the Erode Medical Supplies may also be opened and medicines stocked for supply to the people at very moderate prices.

The president congratulated the Editor of the Clinical Journal Dr. A. C. Leelakrishnan for conducting the journal in a superb way. He also thanked Dr. T. V. Sivanandam, President, Madras State Branch of I.M.A. for giving life and strength to the Coimbatore District Medical Association.

Dr. C. Victor, Principal, Madurai Medical College gave an interesting lecture on HYPERTENSION. At this stage sports were held and after the sports Dr. N. Sarat Chandra, gave a lecture on Some Aspects of Rectal Surgery. A film show on Diagnosis and Therapy of Pelvic Diseases was shown. The highlight of the day was the Fancy Dress Competition. A record number of members took part in this item which was very entertaining.

The monthly meeting of the branch was held on 13-5-1961 at 6-30 P.M. in the premises of the Association. Sixty members were present. Dr. G. T. Gopalakrishna Naidu, the President, presided.

The President, in a short speech, welcomed the members present, and exhorted all the members to attend all the meetings of the I.M.A. in full strength. Dr. V. Sriramulu, the Hony. Secretary, then read the minutes of the previous meeting of the branch held on 30-4-1961. The President, thereafter, called for nominations for the offices of One President and Three Vice-Presidents of the Central I.M.A. Delhi. The Hony. Secretary was requested to communicate these nominations to the Central Office according to the usual procedure. The President then introduced Dr. Kurian, the Assistant Dt. Medical Officer as a new member. Dr. D. Lakshmanan, the Speaker for the day gave a talk on Common Surgical Emergencies which was much appreciated by the members present.

GORAKHPUR BRANCH—The monthly general meeting of the branch was held on 29-4-61 under the presidentship of Maj. J. N. Jaswal, Civil Surgeon, Gorakhpur at the Railway Hospital, Gorakhpur. Dr. H. P. Singh, father of Dr. S. Singh, D.M.O., N. E. Rly. and Dr. N. K. Ahuja of N. E. Rly. were welcomed by Maj. Jaswal as guests of the evening. The following interesting clinical cases were demonstrated :—An unusual case of Gall Stones which showed filling defect at the Ileocaecal junction on x-ray examination. Dr. Singh also cited five other Intra-Abdominal cases which had shown different pictures on x-ray examination and were likely to mislead the clinician in arriving at a diagnosis. Dr. S. Singh also presented two cases of Low Backache due to sacrilisation treated by transversectomy. Dr. S. P. Agarwal, narrated a case of Psychoneurosis who was running high temperature for several days and was treated by Largactil and Bromides. Dr. P. C. Sinha, Radiologist of Railway Hospital demonstrated a series of x-ray plates on diseases of Ileocaecal junction.

With a view to prevent accidents and introduce safety measures at home and on roads, it was decided to form a committee which will consist of medical, non-medical, road transport and other social welfare agencies.

GWALIOR BRANCH—Meetings of the branch were held regularly and membership strength increased to 75.

In the meeting held on 12-11-1960, Dr. S. P. Shrivastava gave an interesting talk on Recent Advances in the Treatment of Some Common Eye Diseases. In the meeting held on 24-12-1960, Dr. Kamal Kishore demonstrated an interesting case which was followed by discussion. Cinema show was arranged on 27-12-1960 and film on (1) Siquil and (2) Moniliasis, were shown to members. In the meeting held on 21-1-1961 Dr. R. S. Mehta gave an interesting and studied talk on Recent Advances in Neurology. In the meeting held on 11-2-1961 Dr. D. S. Parchure gave a talk on What is Homoeopathy. In the meeting held on 15-3-1961 Dr. D. A. Mazumdar gave a talk on "My experiences in Homoeopathic Medicine." In the meeting held on 13-5-1961 Dr. Amar Nath Ghei gave a talk on Social Medicine. It was decided to hold the next XII Provincial Conference of Madhya Pradesh State Branch at Gwalior in October/November 1961.

MADRAS CITY BRANCH—The annual general body meeting for 1959-60 was held on 23-4-61 at Hotel Dasaprakash, with Dr. G. Sriramulu in the chair. The annual report and the statement of accounts were presented and adopted. Office-bearers were elected with Dr. R. G. Krishnan as president; Dr. D. R. Varman and Dr. K. V. Swamy as vice-presidents; Dr. K. Rama Rao, and Dr. Nazeer Mohamed as hony. secretaries; Dr. P. Krishnaswamy as hony. treasurer; *members of the Central Council*—Dr. V. Samuel, Dr. K. V. Swamy, Dr. K. Rama Rao, Dr. B. Rama Rau, Dr. G. Ramchandramurthy, Dr. A. M. Silverman with Dr. A. Pattabi and Dr. U. Surya Rao as alternate members; *members of the State Council*—Dr. B. Rama Rau, Dr. K. V. Swamy, Dr. A. M. Sivaram, Dr. U. S. Rau, Dr. A. Pattabi, Dr. D. V. Venkappa, Dr. V. Vijayaraghavan, Dr. R. Surya Rao, Dr. G. Sriramulu, Dr. N. Chandrasekharan, Dr. N. Vaidyanathan, Dr. G. Ramchandramurthi, Dr. M. R. Gopalaratnam, Dr. M. Natarajan (Ortho.) and Dr. K. Rama Rao.

In the opinion of the members, the charges levied for biochemical, bacteriological and pathological investigations at Government institutions are exhorbitantly high and reduction by 80 to 90 per cent was requested. The branch invited the All-India Medical Conference in 1962 to Madras. The branch requested the government to reconsider the scales of pay for the medical personnel working in the government, local bodies including public health.

A committee meeting was held on 8-5-61. Fourteen members were present. Different functions were alloted to some of the members. The president narrated in detail the progress made in respect of Building. Re. nomination for president and 3 vice-presidents of I.M.A. for 1961-62, it was decided to call the General Body Meeting. Re. Dr. Balasundaram's letter, it was decided to issue a questionnaire asking for suggestions of members re. questions to be considered by the associations. Regional Committees were formed to enlist members from respective areas. It was decided to study the pay, emoluments, leave etc. to improve the condition of corporation medical officers.

RAI BAREILY BRANCH—A meeting of the branch was held on 13-5-61 in the District Hospital. Films on Peptic Ulcer and Rheumatic Diseases were exhibited.

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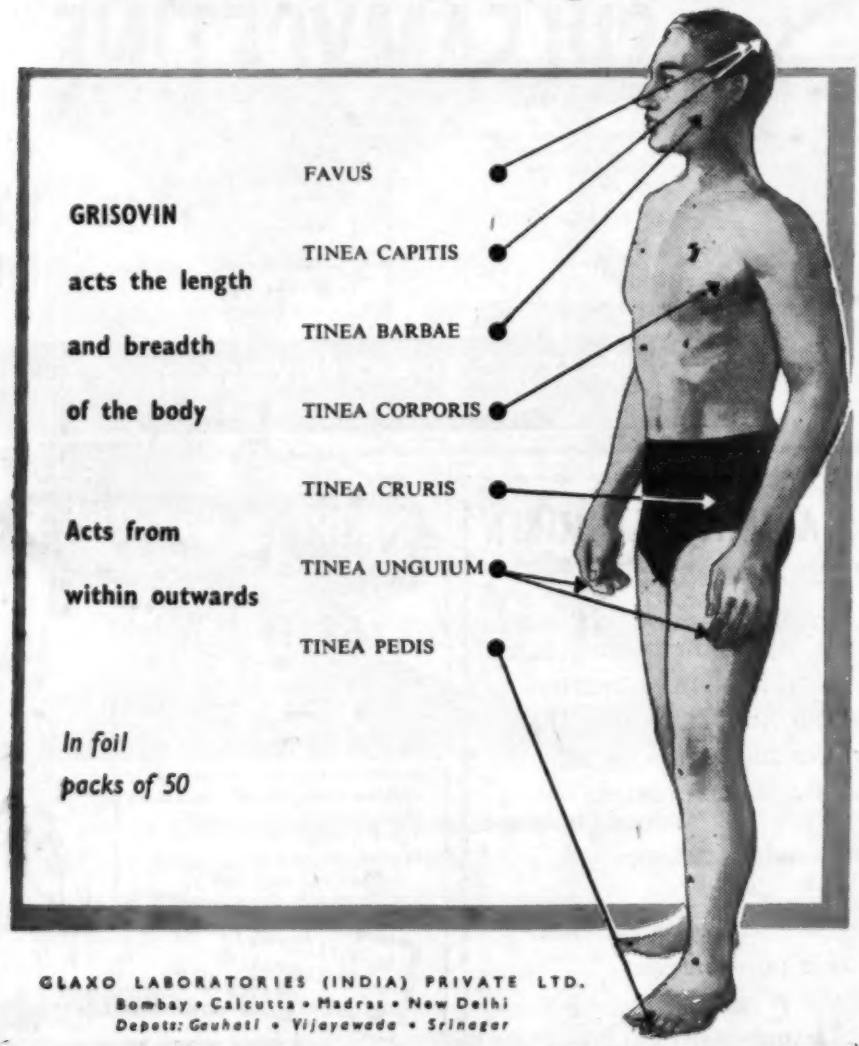

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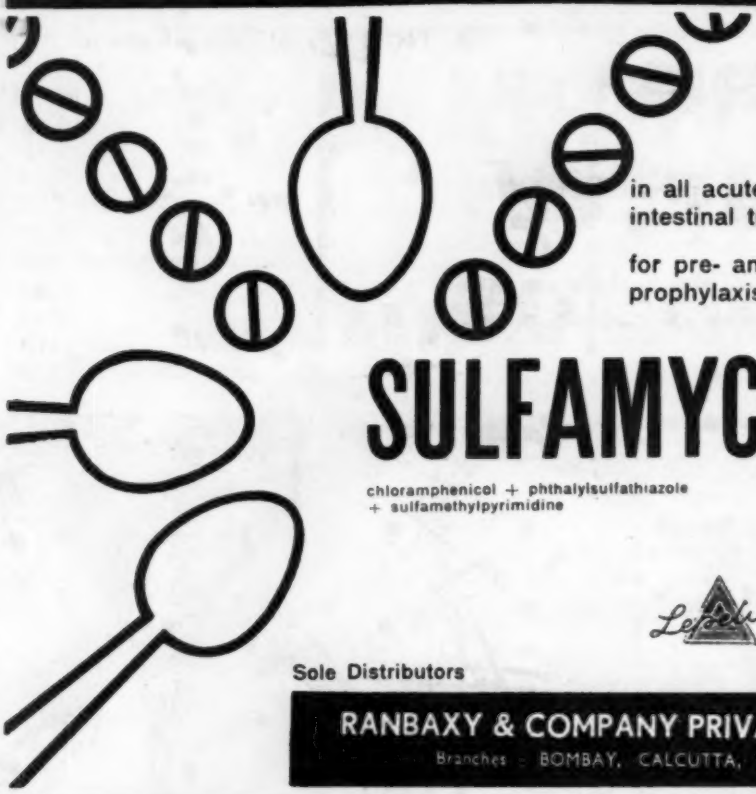

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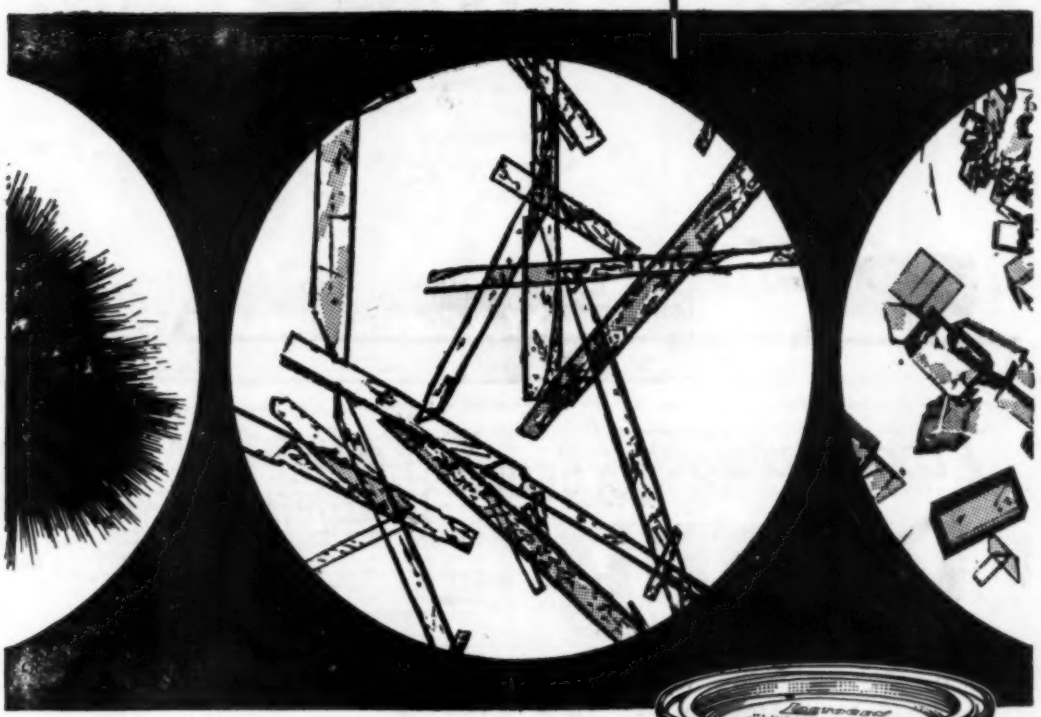

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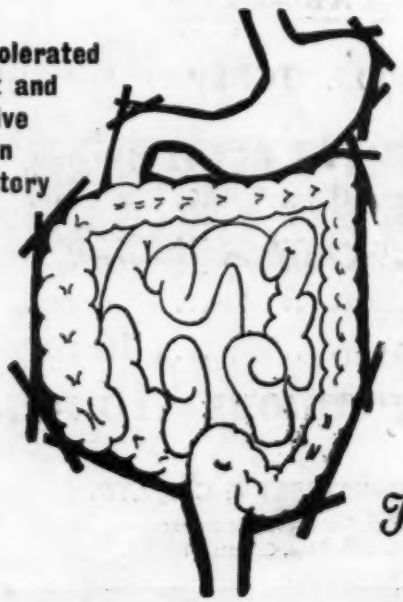

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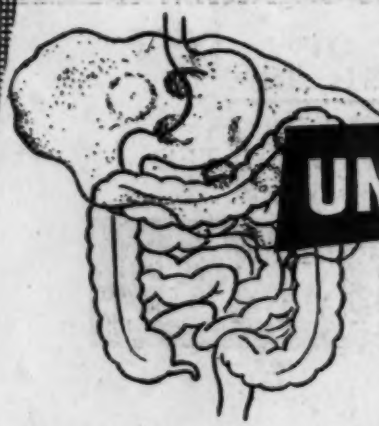
& Amoebic Dysenteries



UNI-DYS COMPD.

TABLETS

Each tablet contains :
Iodochlorohydroxyquine U.S.P. 200 mg., Sulphadimidine 350 mg., Chloroquin Phosphate U.S.P. 50 mg., Homatropine Methyl Bromide U.S.P. 0.75 mg.

DOSE :
4 to 8 tablets a day.

UNICHEM LABORATORIES
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